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ADDRESS.

CHAIRMAN'S ADDRESS.

Delivered in the Section on Obstetrics and Diseases of Women at the forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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I am required by the rules of the ASSOCIATION to open our session with an address, reviewing the gynecologic and obstetric work of the year. To say something on all the topics of interest in these two great departments of medicine would consume all the time allotted to one session. I shall only attempt to briefly draw your attention, therefore, to a few of the most prominent subjects in which we are all interested.

PUERPERAL INFECTION.

Its causation and treatment has been the cause of much writing and discussion during the year. While something has been added to our scientific knowledge of the history and behavior of certain pathogenic germs—the general course of treatment of these cases has been simplified and shortened, instead of amplified and broadened as has been the tendency heretofore.

One of the principal points made by Lusk of New York, in his recent paper before the Obstetrical Society of Philadelphia, on "Puerperal Infection," was "that the more these cases are let alone and the more simple the treatment the more likely they are to get well." Absolute cleanliness of the physician, nurse and patient is insisted upon and greater stress than ever is being laid upon the injunction to make as few examinations as possible after learning the nature of the presentation. In ordinary cases, where there is no rise of temperature, douches are not now recommended at all. Where chill occurs, followed by a rise of temperature preceded by putrid discharges, it is still recommended to ascertain if the uterus is entirely emptied of shreds of membrane and decomposing clots. The best instrument in use *is* now, as it always has been, the index finger, with which portions of after-birth or membranes can be removed, using, if necessary, bimanual pressure under ether.

Curetting was condemned by Lusk as likely to open sinuses and blood vessels, and create raw surfaces, all favoring quicker and more thorough absorption, and doing in this way more harm than good. While Baldy, Hurst and others, insisted in this discussion, that the wise and cautious use of the curette was a great advantage to the patient, accompanied by at least one thorough antiseptic irrigation. The long continued, frequent irrigation of the uterus seems to be condemned from all quarters.

Hysterectomy for puerperal infection seems to be gaining ground, notwithstanding the opposition of Lusk, Price and a number of other prominent men in this country and abroad; though the cases where it is indicated are very few. In a recent paper by Mordicai Price the operation is absolutely condemned as unnecessary in the first place, and moreover always fatal. He claims that the mortality of hysterectomy for puerperal infection is 100 per cent. Others, however, have reported successes, and it would seem as if advancement ought to be made along this line, so that cases surely doomed to death without surgical interference might possibly be saved. The great difficulty is to select the cases. So many apparently desperate cases have finally recovered that it takes great experience and wisdom to be able to say in any given case that this woman will die if her uterus is not removed, and that she will probably live if it is taken out.

The operation is useless where the infection has passed beyond the uterine walls. If colonies of germs are growing and multiplying in the general vascular or lymphatic circulation the removal of the uterus could do no possible good, but would add shock and useless suffering to the patient. The great point in the management of puerperal cases is now, as it ever will be, in the prophylaxis. Prevention here as everywhere else is better than cure.

Lying-in hospitals, which were formerly hot-beds of infection, are now under modern antiseptic management reporting a mortality of only six-tenths of one per cent. The whole system of prevention is summed up in two words, cleanliness and ventiiation.

SYMPHYSEOTOMY.

Since its revival it has been gaining prominence as a substitute for the difficult high forceps operation, craniotomy and Cæsarian section. In perfecting the technique of the operation, the aim has been to deliver the child without laceration of the parts about the urethra, and to so secure the separated symphysis that perfect union would result. In a number of cases, however, it has come to the knowledge of the writer that copious hemorrhages have taken place from laceration of the vascular tissues about the urethra; sometimes the urethra itself being torn, and too many patients were unable to walk after recovery without serious limping, which continued in some cases indefinitely. Unless these two slips in the technique can be overcome or prevented the modern Cæsarian section may be preferred by abdominal surgeons to the revived operation of symphyseotomy.

PLACENTA PREVIA.

The treatment of placenta previa is always a subject of great interest. Nothing especially new seems to have been added to our armamentarium during the year, except the suggestion that hysterectomy be done for the control of the hemorrhage. The diagnosis of these cases is generally not made until the occurrence of the hemorrhage. The patient is then either not in labor at all, or she is in labor and the cervix is not completely dilated, or we may find her with a completely dilated cervix.

There is little difference of opinion in regard to the axiom that "when the placenta is previa the uterus should be emptied." There is no wisdom or safety in delay. No one can tell when the next hemorrhage will occur and whether it may not prove fatal before the arrival of the physician. It is, therefore, our duty to act wholly in the interest of the mother and relieve her from a condition equally as dangerous, as if "the famous sword of Damocles were actually suspended over her head." If the hemorrhage is progressing, with little or no dilatation, in the absence of pains, the vagina should be so thoroughly tamponed as to completely arrest the flow of blood, and contractions of the uterus encouraged. In a few hours the tamponade can be removed, the vagina antiseptically douched, and if little dilatation has occurred and hemorrhage is still going on, the vagina should be again packed. When the cervical dilatation will permit, the fetus should be turned by the combined external and internal manipulation, known as the Braxton-Hicks' method, and one leg brought down into, and plugging up the cervical canal, thus arresting the hemorrhage, by making the child serve as a tampon. Hemorrhage, the main dangerous element in the case, being eliminated, very little else remains to be done but to watch, wait and guard further progress of the labor. Rapid extraction of the child is to be condemned as unnecessary and injurious. It is not only dangerous to the child but to the vascular tissues of the cervix, which are not in a condition favorable for rapid dilatation. A number of cases have been reported of the safe delivery of the child, but in which the mother died soon afterward from hemorrhage produced by laceration of the vascular cervical tissues. The only time in the management of these cases when haste is indicated is at the beginning. Hemorrhage once arrested, the principal danger is averted. It is believed that many patients have been lost by the excited, nervous, hasty and too vigorous efforts which have been made to rapidly extract a child in cases of placenta previa.

A case of puerperal diphtheria treated by antitoxin has been reported by Nisot. He claims it to be the first on record in which the Loeffler bacillus was found to be the sole cause, and in which antitoxin constituted the only treatment. Symptoms of puerperal diphtheria are stated with much exactness and no doubt exists of the correctness of his diagnosis. Three days after using injections of antitoxin the abnormal temperature disappeared entirely.

SURGICAL TREATMENT OF UTERINE DISPLACEMENTS.

The surgical treatment of uterine displacements is attracting more attention this year than last. Numerous articles have appeared in the journals during the year advocating a variety of surgical procedures for their relief. Prominent among which was a paper read at a recent meeting of the New York Academy of Medicine, comparing the relative merits of the Alexander operation, ventral-fixation and vagino-fixation. Mundé, after an experience of ninety-seven Alexander operations with eighty-seven permanent cures, gave his adherence to that operation, and closed his paper with a series of valuable conclusions.

Edebohls spoke in favor of ventral fixation and closed his remarks with the following conclusions: 1, vaginal fixation of the uterus does not come within the sphere of legitimate operations in women liable to subsequent pregnancy; 2, the indications for ventral fixation of the uterus should be limited to the utmost degree in women liable to subsequent pregnancy; 3, ventral fixation is never indicated in uncomplicated retroversion of the uterus; 4, inability of an operator to perform the shortening of the round ligaments may be an indication for ventral fixation, but not in the case of one claiming to be a specialist in gynecology; 5, ventral fixation is indicated as an adjuvant in the performance of combined operations for prolapsus uteri et vaginæ; 6, ventral fixation is indicated as a closing step in all celiotomies in which the adnexa are removed and the uterus is left; 7, ventral fixation may be indicated under exceptional conditions in cases of adherent retroversion with tubes and ovaries in good condition; 8, ventral fixation may be indicated in the most aggravated cases of uncomplicated, sharp retroflexion.

Vineberg spoke in terms of enthusiastic praise of the vaginal fixation operation and reported forty-eight cases with eight relapses. Four of these cases subsequently became pregnant, one ending in abortion. Vineberg believes "that vagino-fixation is indicated in all backward displacements of the uterus, with or without adhesions, and with or without diseases of the adnexa in which surgical interference for one reason or another is demanded. It is particularly indicated when the backward displacement is complicated by moderate prolapsus of the uterus and prolapsus of the anterior vaginal wall. It finds an undisputed field in very fat subjects with thick abdominal walls, in whom the ventral fixation constitutes a serious affair, and in whom an Alexandrian operation is extremely difficult of accomplishment. The same holds good in very thin subjects with thin and yielding abdominal parietes, so far at least as ventral fixation is concerned. The operation," he claims, "can be performed in nulliparæ and even in virgins." He urges that not enough stress has been laid on the large percentage of failures, and the mortality following the Alexander operation, or upon the frequency in which it was followed by hernia.

In the discussion of these papers by Noble, Boldt, Ill, Goffe and others, Alexander's operation was favored in cases where the indications existed, ventro-suspension in exceptional cases where the Alexander operation could not be done, while vagino-fixation was condemned, unless the patient had passed the menopause and was not liable to pregnancy.

Duhrssen, who was among the first to perform vagino-fixation, as one of the legitimate outgrowths of anterior colpotomy, in a paper read before the Berlin Gynecological Society, opposes the intraperitoneal vaginal fixation, but substitutes a much more irrational procedure by recommending a transverse incision in the anterior fornix of the vagina, to which he sutures the plicæ vesicæ, while the uterus is united to the peritoneum of the plica. Duhrssen had observed after vaginal fixation twenty-eight cases of pregnancy with seventeen normal confinements. The abnormal cases present a variety of serious complications. He also reports 148 intraperitoneal vaginal fixations with only one death and one relapse.

Leipold, when this subject was discussed in the Dresden Gynecological Society, opposed vagino-fixation of the uterus, but recommended its ventral fixation. He had performed seventy-three ventral fixations and had never witnessed serious complications during pregnancy or labor. He thinks in cases where trouble has occurred during gestation, that it was due to faulty technique, whereby the uterus was

fixed too near the umbilicus, or immediately above the bladder, that the fundus *plus* the posterior uterine wall was fixed to the abdomen or with sutures of non-absorbable material. The proper technique consists in fixing the uterus about one inch above the symphysis, and the sutures, two in number, should be passed through the anterior and upper portion of the corpus uteri, differing from the suspensio uteri operation as recommended and performed by Dr. Kelly of Baltimore, who passes his sutures through the posterior wall of the uterus, thus suspending it as it were, in a sling. Leipold also performed eight Alexander operations, and although he experienced no difficulty in finding the round ligaments, and placing the uterus in a normal position, he found that the patients frequently complained of pain in walking, and in the inguinal canal, and he also observed that the healing of the wounds was often protracted.

ANTERIOR COLPOTOMY.

In the discussion of the vaginal method of reaching pelvic troubles, another operation has been evolved by Duhrssen of Berlin, a confrère of Martin, which they, with Mackenrodt, have performed several hundred times. This operation, anterior colpotomy, consists, as you all know, in a transverse or vertical incision above the cervix, when the tissues are peeled back, the bladder separated, generally by the finger, which with the ureter is pushed back, then held up out of harm's way by a retractor, to permit the examining finger to be passed into the peritoneal cavity, and the condition of the pelvic organs thoroughly explored. A good-sized uterus can be drawn through this opening, dragging with it the appendages, after the separation of any existing adhesions. Martin is enthusiastic in his praise of this operation in an article in the *Annals of Gynecology* for October, 1895, in which he reports "109 successful operations, a remarkable point about which was the loss of so small an amount of blood that no ligatures or pressure forceps were required, until the abdominal cavity had been opened." Martin recommends this operation in cases of simple myomatous tumors, movable retroflexed uteri, for the breaking up of peritoneal adhesions fixing the uterus, for cases of procidentia, for small cystic ovarian tumors, and also for the treatment of various diseases of the tubes, including pyosalpinx, hematosalpinx and tubal pregnancy. He reported four of the last mentioned operations. When the uterus is drawn down through this incision Martin insists that both ovaries and tubes follow on the posterior surface, as soon as they are freed from adhesions. He states that the adhesions are easily broken up unless they are fixed to the posterior surface of Douglas' pouch—which he still recommends should be reached through the abdomen.

Martin states that "the wound takes only from eight to ten days to heal, so that by the twelfth day the patient may be allowed to leave her bed. No local treatment is required; feverish reaction was unknown in his cases. All of the 109 cases recovered." "In the majority urine was passed spontaneously from the first." This operation of anterior colpotomy presents also advantages in cases of vaginal hysterectomy, making it possible even in cases of cancer of the cervix to draw down the fundus of the uterus into the vagina, thus enabling one to ligate or clamp the tubes, ovaries and broad ligaments in sight, and free from danger of including the ureter or knuckles of intestine, as has been done when the blades of the clamp were thrust up through the posterior and anterior incision, to be guided in the dark, only by the ends of the fingers. The separation of the posterior vaginal wall can, in this way, be made the last act of the operation, and all septic contamination of the pelvic tissues prevented.

VAGINAL VERSUS ABDOMINAL OPERATIONS.

I do not wish to anticipate the discussion on vaginal versus abdominal operations, from which I expect very much of interest and profit for the Section, but even a very partial review of the progress of abdominal and pelvic surgery for the year would be incomplete without reference to this very important subject. While Péan, Richelot and Doyen of Paris were pioneers in the vaginal operation in France, Jacobs of Brussels has done more to popularize and create enthusiasm in this country by broadening the indications for vaginal hysterectomy. He has been ably seconded in the United States by Sutton of Pittsburg, Polk of New York and Henrotin of Chicago. The paper by Garceau of Boston, in the March number of the *American Journal of Obstetrics*, is one of the most descriptive and comprehensive which have appeared during the year. Equally enthusiastic claims are made, however, by advocates of the abdominal and vaginal methods of operating; each claiming advantages over the other both in facility of method and in immediate as well as remote results.

Women are more likely to prefer the vaginal operation when its claims are presented and their judgment convinced that the cure would be equally safe and permanent. The avoidance of the abdominal wound, the stitches, dressings, bandages, the scar, the supporter for six or twelve months, and the liability of ventral hernia, are all controlling arguments to the average female mind.

The increasing intelligence of the laity on these subjects, and their familiarity with abdominal and pelvic operations is no less true than surprising. Hardly a week passes by that the writer is not asked by some lady requiring an abdominal operation whether this work could not as well be done through the vagina, thus avoiding all the above-mentioned troubles. The average medical mind is likely, also, to be influenced by such statistics as are presented by Garceau in the paper above referred to, for very much the same reasons. Probably the same operators, however, who could perform 166 vaginal hysterectomies, with only four deaths would be equally successful when operating by the abdominal route. Péan in Garceau's table of statistics reports 150 vaginal hysterectomies with only 1 death; Richelot 103 vaginal hysterectomies with only 7 deaths; Landau 30 with no death; Pozzi 14 with no death; making with others in the same table, 724 operations with 34 deaths, giving a mortality of 4.6 per cent., while the mortality for vaginal hysterectomy for fibroids of the uterus is equally striking. These operations were mostly performed for small tumors, but Péan, Richelot and others have operated by morcelment on fibroids reaching to the umbilicus.

The following statistics are given by Garceau of hysterectomy for fibroids: Péan, 200 hysterectomies with only four deaths; De Ott, 100 hysterectomies with no death; Richelot, 43 hysterectomies

with 1 death; making, with others in the same table, 406 operations with only 7 deaths, and giving a mortality of 1.7 per cent.

While these operations, presenting such favorable results, are done by the most skillful men, who have gained their experience in abdominal surgery, it is probable that their success would have been quite as great, with most of these cases, had they performed celiotomy instead of vaginal hysterectomy. The great argument, it seems to me, in favor of the vaginal operation, is its completeness, the greater advantages of drainage, the avoidance of the shock occasioned by handling and exposing the intestines, infecting the peritoneum with pus, the abdominal wound, the stitches and the liability to hernia.

FIBROID TUMORS.

The evolution of the treatment of fibroid tumors is marching on, not only "from Atlanta to the sea," but around the world, wherever surgery is practiced, our technique and statistics are constantly improving. Martin of Chicago, my immediate predecessor in this chair, has recently, in a series of valuable papers in the ASSOCIATION JOURNAL, exhaustively treated the electrical, medical and surgical aspects of this subject. Myomectomy, morcelment, the various methods of extraperitoneal treatment of the pedicle, pan and vaginal hysterectomy, have all received much attention during the year. The statistics of hysterectomy mortality are now showing as favorable percentages as have been acquired in ovariotomy. The family practitioner has no longer any excuse for advising a patient suffering from pain, pressure and hemorrhage of a growing fibroid, that the change of life will cause its disappearance or a sure cessation of their troublesome symptoms. Those of us who have examined the subject have reported quite a large number of cases of fibroids growing after the menopause, giving rise to as disagreeable symptoms as before the change of life set in. Instead of disappearing, as was formerly supposed, they frequently take on a more rapid growth and degenerate into cysts, abscesses, calcareous deposits or malignancy. These unfavorable changes, in my experience, occur more frequently after the menopause than before. Instead of a mortality of 80 per cent. resulting from hysterectomy for fibroids, as formerly, it is now our proud satisfaction to be able to say to the family, as well as to the family doctor, that while a growing and bleeding fibroid ought to come out, the mortality accompanying the operation in good hands, is not above 10 per cent., and in early, uncomplicated cases is likely not to be more than 5 per cent.

The writer takes pride and satisfaction in stating that within a comparatively short time he has performed hysterectomy for fibroid tumors of the uterus twenty-five times by the Baer method with but one death, and that occurred five weeks after the operation from intestinal obstruction. Other reports, still more favorable, have been published in the medical journals recently, showing as good, if not better, results than an equal number of ovariotomies.

As this subject in several of its phases, is to receive attention at this session, from several distinguished delegates, I will not delay you longer by saying what will be so much better said by the authors of the papers upon our program. I desire, however, to call your attention to one or two improvements which have been made in the general management of desperate cases requiring surgical interference. The literature of our Section has been enriched since our last meeting by a number of papers suggesting improvements in the prevention of suffering and the saving of human life. The transfusion under the skin, or directly into an open vein, of a pint or more of the normal salt solution has undoubtedly saved a number of valuable lives, not only during a prolonged operation, where there has been a considerable loss of blood, but subsequently from secondary hemorrhage. This method of transfusion has been of service also in the restoration of patients from shock where little blood has been lost. The writer feels that he would recently have lost a case, from secondary hemorrhage, following the removal of the clamps, after a vaginal hysterectomy, at the end of forty-eight hours, if it had not been for the transfusion of nearly a pint of normal salt solution under each breast.

A paper upon our program suggests greater safety and comfort from improved methods in anesthesia. While a death from the anesthetic is as rare as it is horrible, there are many discomforts and some dangers following the administration of ether or chloroform in cases of parturition and also in our abdominal, pelvic or gynecologic surgery. If the author has a method or a combination which will avoid the occurrence of nausea, vomiting and nervous excitement following operations we shall all be very grateful to him. All patients and most operators have been tormented with anxiety on account of long-continued vomiting following difficult operations, lest stitches should give way, ligatures separate and hemorrhage come on, when quiet and calm are so desirable and necessary to the safe conduct of the case. We have fortunately in the chlorid of ethyl and the muriate of cocain local anesthetics which are frequently preferred by the patients as well as operators for minor operations of short duration.

The present Chairman hopes that his successor may be able to report great developments and improvements in the diagnosis of abdominal and pelvic diseases of women, from the evolution and perfection of the *X rays*, about which we have heard so much of late. If its promises are fulfilled we ought to find little difficulty hereafter in our diagnosis of extra-uterine pregnancy, pyosalpinx, fibroid, dermoid or ovarian tumors.

LECTURE.

ON HEALING AND IMMUNIZING SUBSTANCES OF TUBERCLE CULTURES.

Lecture delivered at the meeting of the Delaware District Medical Society, Dunkirk, Ind., June 17, 1896.

BY EDWIN KLEBS, M.D.

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CHICAGO.

I have proven in my book on "The causal Treatment of Tuberculosis," (Leipzig, 1894) that it was possible to heal, perfectly, tuberculosis of guinea pigs and man by certain products of tubercle bacilli, advancing the theory that this effect was obtained by a secretion product of these organisms, found mostly in the fluid portion of the cultures. If this opinion is a correct one the healing process in this disease would find an analogue in a great series of well known biologic processes, such as uremia, cholemia, etc. It

must be acknowledged as a general law that every organism forms substances poisonous to itself, if they are not secreted or separated from the body by the action of glandular secretion as by the kidneys, liver, etc.

The first substance having this property of destroying tubercle bacilli, I obtained from the whole culture, and gave it the name tuberculocidin (or tubercle-killer). It was prepared by the precipitation of the poisonous products of the tubercle culture and contained substances from the fluid parts of the cultures and such as were extracted from the tubercle bacilli. It could be shown that these substances were poisonous for tubercle bacilli, and wholesome for tuberculous animals and men. But it was not yet clear whether these healing influences were derived from the tubercle bacilli or contained in the culture fluid.

The further researches had therefore to be directed toward the preparation of still purer substances for healing purposes. The second step in this direction was the separation of a substance with healing properties from the fluids alone of ripe tubercle cultures, which I prepared in the same manner as tuberculocidin, but exclusively from the fluids after having separated the tubercle bacilli. I named this substance *antiphthisin*, and could demonstrate its effect upon both animals and men. In this country the experiments with antiphthisin could be made on a larger scale, and the effect claimed for it, established beyond question. The animal experiments made by me in the Winyah Laboratory afford sufficient guarantee of its success. But it still remains questionable if we have attained the highest possible results by the use of this substance.

To attain this last aim of our scientific work we can not rely alone on the results of clinical observation, as it is wholly impossible to obtain cases enough that are quite equal as to the intensity of the infection and the degree of resistance in the bodies of the infected persons. These researches can only be completed by experiments on animals.

I. IMMUNIZATION IN TUBERCULOSIS.

That there exists a very high power of resistance against tuberculous processes in normal animals has been shown by myself and others, through the different intensity of infection in the various animals. I have also demonstrated that the greater number of tubercle bacilli injected in the blood are destroyed there; in rabbits not more than seventeen of a thousand bacilli, injected into the blood vessels will find the opportunity of forming tuberculous knots in the tissues. I regard the nidulation (Nestbildung), which we call tubercle, as the first step in tuberculosis. These nests may be developed in very small number, and the tuberculosis can remain for a very long time in a dormant or latent state, as in a single tubercle of the brain, the bones, or the lungs. The spreading of tubercle bacilli from these nests is undoubtedly a consequence of an alteration of the general health. The tubercle bacilli in such nests will not develop without some help from the body of the infected person. If these organisms which lay dormant many years in their nests, begin all at once to increase in number and then propagate by detention in the blood or lymphatic vessels, there must be a diminution in the power of resistance, produced by other diseases (measles, influenza, etc.) or by the poisonous products of the tubercle bacilli. If this is true, there can be no doubt that a great number of the intermissions of the tubercular process, so often remarked by all physicians and patients, are effected by the natural or by the disease acquired immunity of the body. But why is this acquired immunity not developed in all cases of long standing tuberculosis? First it must be remembered that in nearly all cases of tuberculosis the first years of the disease have not the same deleterious character as the later phthisical period, so that for a long time the phthisis has been taken for a different affection. After having noted the unity of all these affections by the presence of the same organism, we conclude the difference must depend upon a change in the diseased body, whose resisting power is diminished.

From another side also this point of view is remarkably sustained. The therapeutics of tuberculosis show us clearly the helpful, sometimes healing influence of all improvements in the general health, whether they be effected by climatic, dietetic or other treatments working in this direction. But all these methods of treatment will prove inefficient if the poisonous effects of the tubercle bacilli on the strength of the organism has reached a certain point.

There are certainly two indications for therapeutics necessary in tuberculosis, the one toward the destruction of the bacilli; the other toward fortifying the infected organism. In their practical application the one without the other will not produce the highest possible effect.

The first question now on all lips will be: Can we arrive at the immunization of the normal organism, so that no tubercle bacillus will grow in such an immunized body?

My own researches to confer immunization against tuberculosis were first instituted by injecting dead tubercle bacilli into normal guinea pigs, secondly by injecting the glycerin extract of tubercle bacilli, thirdly by injecting Kochs tuberculin. The mode of preventive injections and of the following infections with living tubercle bacilli were varied in a manifold manner.

With tubercle bacilli two series of experiments were instituted, the first made Dec. 27, 1894, was commenced by myself, but executed in my absence by others. It embraced twelve guinea pigs, that received daily injections of small quantities of a suspension of dead tubercle bacilli in kresolwater in the proportion of 1 to 10. The three first animals Nos. 1 to 3 received for five days 0.2 c.c. of this mixture, together with 0.1 gm. dead tubercle bacilli; the second three, Nos. 4 to 6, 0.2 c.c. of the mixture for ten days, with 0.2 gm. dead tubercle bacilli, the third three, 0.2 c.c. of the mixture, for fifteen days with 0.3 gm. dead tubercle bacilli, the fourth three 0.2 c.c. of mixture for twenty days, with 0.4 gm. of dead tubercle bacilli.

These experiments were impaired by the cold weather of the winter and by other circumstances not necessary to state here. The worst condition was that the inoculation following with living tubercle bacilli was instituted with a material not at all efficient, as was proven by injections of the same in other, not preventively treated, animals. The tubercle bacilli were imported from Europe enclosed in a bottle without air, and were thus killed, a fact of some interest. If one encloses them in a glass tube, the ends of which are closed by cotton, and dries them by a stream of air deprived by sulphuric acid of its moisture, one can conserve their life a very long time.

From the above cause I was obliged to make a sec-

ond infection with living tubercle bacilli after my return from Europe, on March 25, three months after the commencement of the preventive inoculations. Of the above twelve animals only four could be used for the experiment, of which two had received 1 decigram, one 3 decigrams, and one 4 decigrams of dead tubercle bacilli.

Guinea pig No. 1, with one-tenth gram dead tubercle bacilli, was killed fifteen days after the second efficient infection; it showed fresh spreading miliary tuberculosis of no great extent. Guinea pig No. 2, with also one-tenth gram dead tubercle bacilli, died fifty-three days after the tubercle infection. Its temperature rose to 105 F., and there were found older tubercular changes in liver and spleen, partly cicatrized, and a slight spreading of fresh miliary tuberculosis in the peritoneum and lungs. The animal had received from the nineteenth to fortieth day after the tubercle infection six injections of Paquin's serum (½ to 1 c.c. per dose) evidently without any effect. It is clear also that the preventive dose of one-tenth gram dead tubercle bacilli was not sufficient to give the animal an absolute immunity against tuberculosis three months after the preventive inoculations. The dose of living tubercle bacilli used for the infection was a large one, nearly 8 centigrams. Some milligrams of the same tubercle bacilli have killed the animals in from two to three weeks. A certain retardation of the affection of the tuberculous development can be conceded as possible in these cases. The third animal, No. 8, received 3 decigrams dead tubercle bacilli and the same quantity of living tubercle bacilli at the same time as the others. It died eleven days after the tubercular infection without any sign of fresh tubercular formation, whereas a control-animal No. 50, inoculated the same date (March 25) with the same quantity of the same tubercle bacilli died after thirteen days with all the signs of miliary tuberculosis. As this animal No. 8 received no treatment, we can affirm with greater security than before a delaying influence which was apparent three months after the preventive injection of 3 decigrams (5 grains) of dead tubercle bacilli.

The fourth animal of the series (No. 10) received twenty preventive injections, with 4 decigrams dead tubercle bacilli, and was infected in the same manner and at the same time as No. 8. After the fever commenced it received Paquin's serum, but died with miliary tuberculosis, twenty-seven days after the tubercular inoculation, which proves that this manner of preventive inoculation is not effective in all cases.

As in this whole series it was not clear whether the injection of dead tubercle bacilli had proved fatal in so many cases (an inexperienced observer thought even that the deposition of dead tubercle bacilli in lymphatic glands as proved by Mitchell Prudden and Hodenpyl, could be interpreted as spreading of active tuberculosis), I resolved to repeat the experiment in a somewhat changed manner.

Five new guinea pigs (Nos. 52-56) received, the first one, the others two injections of dead tubercle bacilli, 0.714 gm. The whole quantity was much larger than in the first series and the frequent repetition of traumatism avoided. Not one of these animals died in consequence of the preventive injections. All were inoculated with living tubercle bacilli from ten to sixteen days after the preventive injections; the first three with 5 cg. and the two last animals with 1 dg. One of these animals (No. 52) died sixteen days after the tubercle infection (½ dg., nearly 1 grain of living tubercle bacilli having been injected). The cause of death in this case was accidental, escape of illuminating gas. As all these animals showed fever (102 to 103 degrees F.) and loss of weight after the tubercle infection, the first four received a different treatment. In another publication the history of all these cases will be related in an extended manner. Here it may be sufficient to remark that No. 52, which died after sixteen days, had no signs of tubercular development. No. 54, which died after thirty-six days, was free from infection in the internal organs, some glands were caseous, containing tubercle bacilli. No. 55, which died on the thirty-third day after tubercular infection, showed all inner organs free with the exception of the spleen, which was of normal size but contained two very small gray nodules; some lymphatic glands also contained caseous matter with tubercle bacilli. A small part of the right axillary gland was implanted in a normal guinea pig, No. 82. The animal died, though treated with large quantities of horse blood tubercle serum forty-nine days after the inoculation and proved evidently tuberculous.

We see also that there were infectious tubercle bacilli in this seemingly nearly healed case (No. 55). But it may be that the previous injection of dead tubercle bacilli had a retarding influence on the development of tuberculosis.

The last animal of this series, No. 62, received 1.4 gm. dead tubercle bacilli and was ten days later infected with 1 dg. living tubercle bacilli. It died thirty days after this infection. The axillary gland of the side of injection proved caseous and contained tubercle bacilli. The inner organs were wholly free from tubercles with the exception of the spleen, which contained a small quantity of gray nodules. The conclusions from these experiments are:

1. That the injection of greater quantities of dead tubercle bacilli is not at all deleterious to the animal.

2. That a quantity of 3 grams dead tubercle bacilli to 1,000 grams weight would be very effectual to retard the development of tuberculosis, introduced ten days after the preventive injection in the animal.

It is clear that this result, so interesting from a scientific view, has no practical value. If the dosage just given is available for men, a full-grown man weighing 120 pounds would need 180 grams, more than 10 ounces of air-dried tubercle bacilli. We must therefore search whether we can isolate the immunizing substance from the tubercle bacilli. This was the object of the third series of experiments, instituted with the watery-glycerinic extract of tubercle bacilli, for brevity named tubercle extract. This fluid itself would not be suitable, because it is too much diluted. It is therefore precipitated by strong alcohol; the precipitate, soluble in any quantity of kresol-water (½ per cent.) can be prepared in any desirable strength. I use it at present in 0.5 and 1 per cent. solutions. In this series nine guinea pigs of 500 grams received 2½, 5 and 7½ c.c. tubercle bacilli extract subcutaneous injected in from one to sixteen days. Three animals received the same dose. In each division two animals remained after the infection without treatment. The whole series was progressing exactly parallel to the first series with dead tubercle bacilli. The first infection in January was ineffectual; the second was instituted on March 25 with the same material as in the first series (7.85 cgr. air-dried tubercle bacilli and 2.15 cgr. cinnabar). Three ani-

mals, Nos. 15, 17 and 21, died previous to the effective tuberculous infection. These preventive injections therefore proved much less dangerous than the parallel cases with dead tubercle bacilli. Now we observe the results in the animals without any treatment:

Guinea pig No. 14, tubercle bacilli extract 2½ c.c., tuberculous infection three months later; died twenty-three days after the tuberculous infection. Weight, 585 grams January 9, 635 grams March 25 (tuberculous infection), 505 grams April 15 (loss, 80 grams day before death).

Postmortem—Liver yellow infarcts and few gray nodules; spleen not much enlarged, smooth, miliary tubercles; lungs free from infection; glands slightly swollen, not caseated; peritoneum: some old, but *very slight fresh tuberculous development.*

No. 18, 5 c.c. tubercle bacilli extract; tuberculous infection three months later; died twenty days after the tuberculous infection. Weight, 520 gms. January 9, 690 March 10, 630 March 26, 535 April 13; gained 15 gms. Died April 14.

Postmortem—Liver red, flabby, contains few small gray nodules; spleen slightly swollen (1 9-16x13-16 inches), weight 1.85 grams, pale, a few gray nodules; lungs congested, free from tubercles; glands not swollen; peritoneum: the masses of cinnabar and tubercle bacilli in this case injected directly into the peritoneal cavity are lying under the liver; they contain great, hard fibrous masses, very few miliary tubercles only on the mesentery; mesenteric glands slightly swollen, not caseated. Slight development of fresh tubercles.

No. 20, 7½ c.c. tubercle bacilli extract; tuberculous infection three months later. Died nineteen days after the tuberculous infection. Weight, 520 gms. January 9, 720 March 18, 645 March 26. Died April 13.

Postmortem—Liver not enlarged, surface smooth, yellow tinge (fatty degeneration), few miliary tubercles on surface; spleen not enlarged (1 5-16x⅝ inch), weight 1.37 grams, free from nodules; lungs partly collapsed, pleuritic exudation, in the right side particularly, some suspicious nodules in the thickened pleura, substance of lungs free; peritoneum: few nodules on the right side near the injected masses of tubercle bacilli and cinnabar; glands not swollen, not tuberculous.

In all three cases was a very slight development of miliary tubercles, no deeper tuberculous alterations of the great glandular organs (spleen, liver, lungs), as usually found in so intense infections after three weeks' standing. Tubercle bacilli extract proves therefore in a high degree immunizing.

That this conclusion is a correct one is proved by three control-animals, guinea pigs, Nos. 26, 49 and 50, infected with the same material in equal quantities, on March 25, without undergoing preventive injection of any kind. I give the results in the same manner as before:

No. 26, tuberculous infection 0.0785 c.c. with cinnabar March 25. Died April 14, twenty days after tuberculous infection (ineffectual injection January 6). Weight, 500 grams January 18, 480 March 22, 405 April 14; loss 95 grams.

Postmortem—Subcutaneous tissue contains an enormous infiltration with caseous masses spreading from the abdomen to the inguinal region and back, ulcerating at the sacral region. Peritoneum: In the great net, large nodules of firm caseous tissue, containing cinnabar in the center; some exudation, beside miliary tubercles in great number at the left side of peritoneum; tuberculous infiltration of lymphatic vessels near the great nodules; enormous tuberculous infiltration of mesenteric glands. Liver greatly enlarged, contains numerous masses of yellow tubercles, nowhere cicatrization; spleen enlarged (1½x1), firm, gray; lungs congested, somewhat collapsed (pleuritic effusion on both sides), contain numerous gray tubercles; glands, inguinal and crural, swollen, caseated.

No. 49, tuberculous infection 0.0785 c.c. with cinnabar March 25. Died April 14, twenty days after tuberculous infection. Weight, 560 grams March 26, 445 April 14; loss 115 grams.

Postmortem—Peritoneum: omentum majus forms a string of yellow nodules, two of them containing cinnabar, from here a spreading of tuberculous masses all over the mesentery and the right kidney; liver much enlarged, filled with yellow masses, no cicatrization; spleen somewhat enlarged (1⅜x⅞ inch), weight 1.88 grams, gray, firm, with many gray nodules on the surface; lungs: right lung totally gray, consolidated, in left some nodules. The injection in this case was made intermuscular on the right side of abdomen.

No. 50, tuberculous infection 0.0785 c.c. with cinnabar 0.0215 gm. March 25. Died April 4, twelve days after tuberculous infection. Weight, 580 grams March 26, 495 April 13; loss 95 grams.

Postmortem—Peritoneum: injection mass forms a protrusion of peritoneum, free from infection on this part, but on the great net many deposits of cinnabar, part with gray tuberculous formations, the same in the gastro-hepatic ligament, in the mesentery of spleen and in adhesions of the omentum to the liver and left kidney; liver not enlarged, contains numerous small and large nodules, the latter yellow, the former gray, sometimes containing cinnabar; lungs free, edematous; glands: substernal glands swollen and reddened.

We remark that the same tuberculous infection having made such small alterations in the animals previously injected with the tubercle bacilli extract, has without this, produced in twelve days a far disseminated peritoneal tuberculosis, the origin of which is clearly demonstrated by the cinnabar taken up with the tubercle bacilli by leucocytes and conveyed by them all over the peritoneum. In the farther progress of this affection we note in the first two control animals occur the greatest possible tubercular alterations of the liver, spleen and lungs. The same progress is made also by the tubercle bacilli, enfeebled by the preventive injections of tubercle bacilli extract, but not with the same effect. As this is the only difference in these six cases, we must say with as much certainty as is possible to obtain in animal experiments, *that the glycerin extract of tubercle bacilli produces a very high degree of immunization, proving effective three months after a very high degree of tubercular infection.* As the greatest injected quantity of tubercle bacilli extract was 7.5 c.c. to 500 gms., containing 7.5 centigrams of organic matter, the requisite quantity for men would be probably 15 cg. to one kilo., 7.5 grams for 50 kilo., or half an ounce for 100 pounds, a quantity of organic substance, dissolving readily in 50 c.c. kresol-water (0.2 per cent.). Such a small quantity would immunize a full-grown man for more than three months.

The clinical observations made by the use of tuberculocidin, that contains a large quantity of bacillus extract, agree with these results. The most success-

ful cases that I have seen in Europe and in this land, were those in which the application of tuberculocidin and tubercle extract followed the antiphthisin treatment.

The same conviction resulted from animal experiments I instituted in the last year, for the comparison of pure antiphthisin treatment and a mixed treatment with antiphthisin and tubercle bacilli extract. The tubercle-killing power of antiphthisin, proved by new experiments, must be diminished by immunizing, probably also by antitoxic influences. I will speak later about the best methods of the combined treatment. Now it may suffice to demonstrate the fact, that by such treatment the gravest tubercular changes in guinea pigs, namely the enormous tubercular development in liver and spleen, can be entirely healed. The differences in the two cases of guinea pigs, now to be related, may partly depend on a different power of resistance, but partly also on the different quantity of tubercle bacilli extract they received, the antiphthisin treatment being nearly the same.

The two animals, Nos. 109 and 110, of more than 300 grams weight, had received, before the tuberculous infection, injections of tubercle toxins, prepared by digestion of tubercle bacilli with pepsin and pancreatin, which proved non-effective, but caused high fever. Immediately afterward infected with one dg. air-dried tubercle bacilli, a very large dose, the typical tuberculous fever is developed ten days afterward, rising to 102.3 and 103 degrees average temperature.

The treatment commenced on the twenty-second day after the tuberculous infection with small doses of antiphthisin, 2 to 3 cg., sometimes 2 dg., per day, and such of tubercle bacilli extract 2 cg. No. 109 received in fifty-eight days 1.75 grams antiphthisin and 0.06 c.c. tubercle bacilli extract. No. 110 in fifty-nine days 1.51 grams antiphthisin and 0.12 c.c. tubercle bacilli extract. The daily average temperature varied from 100 to 101 degrees. During this time enormous alterations of the liver and spleen were developed; in No. 109 the spleen measured at the time of death, 142 days after tuberculous infection, two and one-fourth inches in length, one and five-eighth inches in breadth, and seven-sixteenths of an inch in thickness, whereas in No 110 this organ at the same time measured no more than one and three-sixteenths inches in length and thirteen-sixteenths of an inch in breadth. The first contained a great number of yellow spots, the second was quite free from tuberculous matter.

The liver is very much enlarged in the two cases, but contains in No. 109 hardly any normal substance, being very hard and fibrous throughout with many yellow spots, a little more conserved liver tissue in the left lobe. In No. 110 the liver consists of quite normal hypertrophic tissue, forming flat projecions between deep fibrous scars.

The lungs of No. 109 contain in all parts white nodules. In No. 110 the lungs are quite free from any tuberculous deposit.

The abdominal cavity is free from tubercles in both animals. The glands firm, fibrous; only in one inguinal gland of No. 109 was found a small purulent deposit, containing very few degenerated tubercle bacilli. A few more tubercle bacilli were found in the nodules of the lungs of the same animal. No. 110 was quite free from tubercle bacilli, so far as can be demonstrated by microscopic research.

No. 109 was very anemic, a consequence, as it seems, of the deep degeneration of liver and spleen.

But now we return to the clinical history of the cases. On the ninety-first day after the infection, ten days after discontinuing the first series of treatments, probatory injections with my tuberculotoxin 0.3 gm. were instituted. No 109 gave a reaction to 102, No. 110 no reaction.

In consequence of this result it seemed desirable to institute a new series of antiphthisin injections. In this was used a method that had effected good results in other cases. Commencing with small doses, one gives, every day, a little more until a very large dose is reached. One recommences then with small doses, increasing to larger as long as the temperature is elevated. In No. 109 we increased from 2 to 20 cg. in eighteen days and decreased the temperature from a maximum of 102.4 degrees to 99.6 degrees average temperature, the second time from a maximum of 101.2 degrees to an average temperature of 99.7 degrees. In No. 110 there was scarcely any change of temperature, the average being between 100 and 101 degrees. It is true that this temperature was higher than normal, but we find the same elevation in nearly all healed cases; it seems that in such animals the pyrogenic toxins remain a longer time in the body than the living tubercle bacilli, and the tuberculous tissue may be deposited in some irrecognizable residues of dead tubercle bacilli.

The difference in the healing process in these two animals may depend partly upon a different normal resistance of the two organisms, but perhaps the more prolonged use of tubercle bacilli extract has had a beneficial influence on the healing process in No. 110.

II. THE COMPOSITION OF TUBERCLE BACILLI.

The highly immunizing effect of the glycerin extract of tubercle bacilli must direct our attention more to the composition of tubercle bacilli. My researches have given me up to this time, the following results:

1. The tubercle bacilli contain a very great quantity of fatty substance, a fact first remarked by Hammerschlag and Neusky, then confirmed by Dr. von Schweinitz of Washington, D. C., who made the first quantitative determination; he found 25 per cent. fat. I commenced my researches before knowing of this last valuable work. I found not more than 22 per cent. fat, but this percentage depends very much on the degree of dryness of the bacilli. As they contain a great quantity of glycerin, a fact noted by Prof. Abell of Baltimore, in the alcoholic ethereal extract, which explains their high hygroscopic quality. The pure ethereal extract gave me a firm red colored fat melting at 42 C., 20.5 per cent. of the whole mass. But besides this fat the tubercle bacilli contain a white fatty substance that can be extracted by benzol and is not soluble in ether; this fat is harder than the first, the melting point higher, if I remember rightly above 50 degrees C. The quantity of this benzol fat was 1.14 per cent.

The second point regarding the tubercle bacilli-fat is that this substance is the single cause of the specific staining of the tubercle bacilli. The separated fat gives the fuchsin staining not destroyed by mineral acids, and tubercle bacilli deprived of this fat do not stain in the same manner. The granules stained by fuchsin in the so-called degenerative forms of tubercle bacilli are nothing but remains of this fat. They are therefore better called *atrophic tubercle bacilli.*

2. The greater part of tubercle bacilli is formed of nuclein. After extracting the fat by ether and benzol and digesting the residue by pepsin and chlorhydric acid, the nuclein can be dissolved in alkalin fluids and precipitated by alcohol. After repeated solution and precipitation we obtain a pure nuclein, containing 8 to 9 per cent. phosphorus, as much or more than was found by Miescher in the eggs of salmon.

This tubercle nuclein and the fats have no influence on the tuberculous process, that I could see in a large number of varied experiments on animals.

3. The third constituent of tubercle bacilli is the glycerin extract containing a substance precipitable by alcohol, giving biuret reaction. Whether this substance is a simple one or not, whether it acts in its totality in immunization or whether it contains only ferments with immunizing power, must be determined by further researches.

III. THE TUBERCLE KILLING POWER OF ANTIPHTHISIN.

I will here add a short note about an experiment fundamental to my theory, now repeated with some change. In my book on page 174, I had reported an experiment (No. 23) showing that fresh tubercle bacilli are killed, if treated by a mixture of tuberculocidin and erethin (similar to tubercle toxin) prepared from the bismuth precipitation of culture fluid. Tubercle bacilli treated in this manner six days proved totally inoffensive, whereas the same, untreated bacilli killed animals by tuberculosis in fourteen days. One of the animals, that had received tubercle bacilli treated with tubercle culture lived more than a year and was found quite free from tubercles (No. 4).

I repeated this experiment with pure antiphthisin in the following manner:

Jan. 12, 1896, 25 c.c. antiphthisin with 1 per cent. organic matter was precipitated by absolute alcohol, the precipitate firmly adhering to the walls of the bottle; the alcohol was poured off, the residue was slightly warmed, washed with ether, the latter evaporated, the residue was dissolved in 2.5 c.c. freshly distilled water. Each cubic centimeter contained 0.1 gram dry antiphthisin.

In this fluid I suspended under aseptic measures a large quantity of tubercle bacilli taken from a full grown culture.

Three guinea pigs received from this emulsion injections of the same quantity, No. 146 after one, No 118 after two, and No 150 after three days. Two control animals of the same weight (186 to 252 gms.) were observed in the same manner, the weight being taken in the morning, also the temperature at 5 o'clock P.M. No. 148 infected with living tubercle bacilli on February 2, weighed January 13, 252 grams; February 5, 325 grams; March 19, 242 grams. It died on this date after long continued high fever (102.6 max.) forty-three days after the tubercle infection, and proved highly tuberculous; in liver and lungs many gray tubercles, the glands caseated; at the injection point innumerable tubercle bacilli; in the organs also were great quantities of them.

No. 147 remained totally free from infection and showed the following weights: January 13, 186 grams; February 5, 249 grams; gain 63 grams; April 19, 430 grams; gain 181 grams. Total increase of weight in 97 days 244 grams.

No. 146 having received February 13 tubercle bacilli, treated twenty-four hours with pure antiphthisin, showed the following weights: January 13, 186 grams; February 5, 210 grams; gain 24 grams; February 25, 195 grams; loss 15 grams. It gained in 43 days 9 grams. It died on February 25 and showed on postmortem the external lymphatic glands enlarged and slightly caseous. In the inguinal and subclavicular glands were found a few degenerated tubercle bacilli; in the other glands none. The inner organs proved quite free from tubercles and tubercle bacilli. The temperature reached on one day 100 degrees F., was generally between 99 and 100.

No. 149 having received January 15 tubercle bacilli, treated seventy-two hours with pure antiphthisin weighed: January 13, 183 grams; February 5, 209 grams; gain 26 grams; April 19, 300 grams; gain 91 grams. Total gain in 97 days 117 grams.

No. 150 having received February 14 tubercle bacilli, treated forty-eight hours with pure antiphthisin, weighed: January 13, 323 grams; February 5, 365 grams; gain 42 grams; April 19, 469 grams; gain 104 grams. Total gain in 97 days 146 grams.

The temperature of the two last animals was in April higher than normal, varying from 100 to 102 degrees. The average temperature (5 o'clock P. M.) from April 1 to 19 was in No. 149, 101.20 degrees; in No. 150, 100.78 degrees. I think that these two animals were also tuberculous, but in such a slight degree that after 100 days their growth in comparison with the normal animal was but slightly retarded; in No. 149 (gain 117 grams) by 127 grams; in No. 150 (gain 146) by 98 grams. This proves that antiphthisin, in twenty-four hours, has a marked debilitating influence on living tubercle bacilli. I have noticed that such bacilli can kill an animal in twenty-two days, but with very slight tubercle development and without fever.

The treatment of tubercle bacilli with antiphthisin for two or three days gives a far better result, as these animals lived more than one hundred days after the injection of the treated tubercle bacilli.

That the absolute killing of tubercle bacilli in antiphthisin requires a longer time (in my experiment with tubercle culture six days were required) must be explained by the large proportion of fatty matter contained in the tubercle bacilli, diminishing in a high degree the osmotic power against watery solutions. The destruction of the tubercle bacilli in the living body by tuberculocidin or antiphthisin is a much more complicated process. I think that here the chemiotaxis is of decided influence; the leucocytes, assuming these substances transport them to the diseased parts and forcing them into the interior of the tubercles, destroy their vitality, at first dissolving the fats, then digesting the protoplasm of the tubercle bacilli.

As the tubercle bacilli extract has sixteen times higher power of chemiotaxis than antiphthisin, I recommend the addition of the tubercle bacilli extract to the antiphthisin treatment or the use of tuberculocidin alone in the treatment of human tuberculosis without higher inflammatory processes and fever. As antiphthisin is the mildest form of tubercle bacilli products and has no injurious effects, it should, in such cases, commence the treatment. Two hundred c.c. antiphthisin, 75 to 100 tuberculocidin and 50 c.c. extract, taken in six to seven months seems to be a sufficient dose in most cases.

Let us have a department of Public Health!

ORIGINAL ARTICLES.

TUBERCULOSIS OF THE MALE GENITAL ORGANS.

Read by title at the meeting of the American Surgical Association, at Detroit, Mich., May 26–28, 1896.

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The male genital organs are the seat of as yet imperfectly understood conditions which predispose them to tubercular infection. The literature on tuberculosis of these organs is scanty as compared with tubercular affections of other organs, such as the lungs, pleuræ, peritoneum, lymphatic glands, bones, joints, meninges and skin. A careful search of what has been written on tuberculosis of the male genital organs will convince the searcher for truth and instruction that this subject has not received the attention its importance demands. The observations of many clinicians in this comparatively new field of surgical pathology present no uniform and many times diametrically opposite results. The deductions drawn in the postmortem room by professional pathologists likewise lack uniformity, and the different results obtained have often been taken as a basis to fortify the opinion of individual surgeons. This department of surgical tuberculosis is in its primitive stage and offers many inducements and opportunities for careful clinical observation, and bacteriologic and pathologic research in the future. The great obstacle to a more perfect development of the surgical aspects of tuberculosis of the male organs of generation, in the past and to a certain extent at the present time, has been, and remains, accuracy in diagnosis. Since the mystic term scrofula has been almost completely eliminated from the present nomenclature of surgical affections it has been found that many of the chronic inflammatory diseases of the male organs of generation are of tubercular nature. The important questions whether the male genital organs are the seat of primary tuberculosis, or whether the disease extends to them by a progressive infective process from the upper portion of the urinary system have not been definitely settled; each side can show its exponents whose views command respect. For my own part I am firmly convinced that in a fair percentage of cases the male genital organs are the seat of primary tuberculosis, the tubercle bacilli finding in the blood vessels of the complicated genital apparatus a favorable condition for their mural implantation, growth and reproduction. These are the comparatively rare cases of hematogenous primary tuberculosis of the male genital organs caused by the deposition, growth and reproduction of tubercle bacilli floating in the general circulation, locating in some part of the genital apparatus without a discernible tubercular lesion in any of the other organs. Such cases occur, but are few as compared with instances of secondary tuberculosis complicating tubercular affections of other organs or occurring in the course of extension of a tubercular process by continuity of surface from the urinary organs. It is my purpose on this occasion to call your attention to some of the salient points in the etiology, pathology and clinical aspects of tuberculosis of the male genital organs on the hand of the current surgical literature and shall emphasize some of the topics which have attracted my attention by my own personal observations.

Tuberculosis of the Penis.—The frequency with which tubercular affections of the female organs of generation occur has recently received the well merited attention of gynecologists. The observations which have been made in this direction have reminded the surgeon of the possibility of direct inoculation during coitus. That such an occurrence is beyond the range of imagination no one can deny. Years ago Verneuil (Hypothèse sur l'origine de certaines tuberculeuses génitales dans les deux sexes. *Gaz. hebd.*, No. 14, 15, 1883) expressed the opinion that primary genital tuberculosis, which does not depend on scrofula is probably caused by direct infection during coition, that is, by the wandering of tubercle bacilli through the external genital organs to a point of the apparatus in which favorable conditions for their localization and reproduction exist. Poncet (*La Médecine Moderne*, Paris, July 29, 1890) reported to the French Congress for the Study of Tuberculosis an article on tuberculosis having its origin in the penis. Three varieties are mentioned: 1, balano-preputial tuberculosis; 2, tuberculosis of the mucous membrane (this variety usually showing itself first in the deep urethra), and 3, tuberculosis of the urethra which consists of fungous masses involving the periurethral tissues, thereby allowing the urine to infiltrate the penile structures. I have reason to believe that many of the cases of destructive lesions of the penis treated by amputation of the organ in which no recurrence followed the disease was not carcinoma as surmised, but of a tubercular character. During the last two years I have seen two cases of extensive destruction of the penis from what I believed to be a tubercular process. One of the patients under the care of Prof. Scales in Mobile was a colored man about 35 years of age, single, with no history of syphilitic infection. The ulceration commenced upon the external surface of the prepuce several years ago and was not attended in the beginning by enlargement of the inguinal glands. The ulceration and sloughing extended successively to the glands and body of the penis and finally resulted in almost complete destruction of the entire organ. Later the inguinal glands and skin covering the scrotum became involved. The inguinal glands became caseous and several well-marked tubercular abscesses developed. When I saw the patient he was confined to his bed and the discharge from the extensive ulcerated surfaces had resulted in inoculation tuberculosis which covered a considerable area of the gluteal regions on both sides. Some of the ulcers would heal from time to time when the new scar tissue would again break down and give place to an ulcerative process. No signs of syphilis could be detected upon any part of the surface of the body or in any of the internal organs. The patient had been subjected repeatedly to antisyphilitic treatment with various preparations of mercury and iodin without any improvement; in fact, such treatment appeared to aggravate the local conditions and still further impair the general health of the patient. Under anti-tubercular treatment, local and general, consisting in the use of antiseptics, balsam Peru, and later iodoform, repeated curettage, and the internal administration of guaiacol and cod liver oil, the disease was arrested, the ulcers healed rapidly, and the general health, which had been precarious for several years, was so much improved in the course of a few months that the patient was able to resume light work. I had no opportunity to make a microscopic examination of the tissues or to search for the bacillus in this case,

but I have but little doubt both from the clinical history of the case, as well as the character of the local lesions, that the affection was one of primary tuberculosis of the skin which extended rapidly to all of the tissues of the penis and later to the lymphatics, and finally to neighboring parts exposed to contamination from the profuse discharge from the ulcerated surfaces. The very fact that the lymphatic glands were converted in whole or in part into cheesy masses speaks for the diagnosis of tuberculosis and against syphilis. It is well known that in the negro tuberculosis often pursues an exceedingly rapid course. In a few weeks tubercular glands break down and suppurate, a condition often associated with quite extensive phlegmonous inflammation of the surrounding connective tissue, the consequence of a mixed infection with pyogenic organisms. It is therefore not surprising that in rare cases tuberculosis of the penis should result in extensive destruction or complete loss of the organ under the influence of a double infection in persons peculiarly susceptible to the ravages of this disease.

For a full report of this case, I am indebted to Professor Scales and Dr. Fonde:

John Mitchell, mulatto, aged 31. Entered City Hospital of Mobile, Dec. 22, 1893, with an ulcer on the balano-preputial fold and extending on the glans penis. The ulcer was cauterized with nitric acid and an iodoform dressing applied. The patient improved slightly and at the end of two months left the hospital. He returned again, after an absence of six months with the entire penis destroyed, and with a large ulcer on the nates which rapidly extended. He suffered great pain, showed serious pulmonary complications, was greatly emaciated and confined to bed for six months. During this time the actual cautery was applied, followed by dressings of a 5 per cent. solution of balsam Peru in castor oil, and also a short course of guaiacol. After the first two cauterizations there was decided improvement in the ulcer, but the third and last were followed by no benefit, the ulcer continuing to enlarge. He was, however, sufficiently improved to enable him to leave his bed for an hour at a time. The patient's condition remained about the same for four or five months, when he seemed to steadily grow worse. Dressings of iodoform were applied daily from this time until Jan. 15, 1895, when Prof. N. Senn saw the case and delivered a clinical lecture in the hospital amphitheater to the students of the Medical College of Alabama. The patient's condition was desperate at this time. The ulceration had extended by numerous ulcers closely adjoining and finally coalescing, the whole being purulent until the whole perineal region, coccygeal fissure and both nates were denuded, and in some places the destruction extended deeply. The bladder was emptied through several perforations in the perineum, and single shallow ulcers appeared on the scrotum. The entire extent of the ulceration on the nates measured ten inches vertically by nine inches transversely, being greater on the left buttock.

Dr. Senn advised a thorough course of guaiacol and tonics until the general condition of the patient would permit a thorough and radical removal of all infected tissues by curettement.

Guaiacol was commenced in doses of gtt. v, well diluted in milk, three times a day, and gradually increased until the patient was taking ten drops four times daily. He was also given a course of syrup of iodid of iron. Patient improved sufficiently in three months to leave bed and lounge around for most of the day, and slept and rested well, which he had not been able to do since his arrival at the hospital, unless under an opiate. He still suffered pain the greater part of the time. Curettement May 31; surgeon, William M. Mastin. Patient was anesthetized and the whole field of infection carefully and deeply scooped out, and edges trimmed with scissors. Some of the pockets extended deeply into the nates and some burrowing far under the skin. One at the gluteal creases penetrated nearly to the femur in the adductor muscles. A dressing of iodoform was then applied. Rapid healing followed and pain was almost entirely absent when patient recovered from the immediate effects of the curette.

Curettement July 10; surgeon, William M. Mastin. The condition very much better and healing had taken place in considerable part of the field of the ulcer. Was again thoroughly curetted with the same marked relief and improvement following.

Curettement August 7; surgeon, William M. Mastin. An occasional fresh breaking down in the cicatricial tissue beneath the surface invariably yielded to the curette and healed rapidly.

Curettement Aug. 30, 1895; surgeon, William M. Mastin. The same marked improvement. The main portion of the field showed healthy and pliable cicatrix.

Curettement Sept. 6, 1895; surgeon, William M. Mastin. Treated as before with same benefit.

Curettement October 31; surgeon, T. S. Scales. There were several small and shallow ulcers in the coccygeal fissure and in the inguinal fold on each side the scrotum, in addition to the large and deep one which remained in the gluteal crease. These were carefully scraped and iodoform thoroughly rubbed in. Followed by improvement.

Curettement Jan. 20, 1896; surgeon, James A. Abrahams. There were two remaining ulcers, one next the scrotum in the coccygeal fissure, and the other in the gluteal crease, which again received a careful and extensive removal of the involved tissue, iodoform rubbed thoroughly in, followed by healthy granulation at the bottom of the ulcer and rapid healing.

Curettement Feb. 20, 1896; surgeon, James A. Abrahams. There was steady improvement, the only large ulcer remaining was the one in the gluteal crease, which was filling up rapidly. Scraped and treated as before, improvement following.

Since the second curettement the patient has been able to do work around the hospital and acted as nurse for some time. He is six feet tall, weighs 185 pounds. Pulmonary symptoms have disappeared and he is robust, very strong and healthy. He suffers no pain. The only remaining ulcer is the one at the gluteal crease, which is now about the size of a half dollar and is shallow. This will be scraped again in a few days.

Very recently I have had an opportunity to examine quite a similar case in the service of Dr. Bouffleur; at the Cook County Hospital. In this case the lymphatic glands in the groins became involved after a considerable portion of the penis had become destroyed by ulceration and sloughing. Syphilis was suspected, but the most energetic treatment made no impression on the progress of the disease. Local and general anti-tubercular treatment with excision of the enlarged lymphatic glands, effected a speedy and permanent cure. Many sections of the diseased tissue were examined for bacilli with negative results, but the existence of isolated multinuclear giant cells furnished an additional proof of the tubercular nature of the primary disease and the secondary glandular complications. In both of these cases the base and borders of the ulcers were not indurated, the surface covered with pale, flabby, edematous granulations, the margins undermined, the overhanging skin of a bluish tint. The spongy and cavernous portions of the penis appeared to yield alike to the tubercular destruction. In neither of these cases did the disease involve the urethral mucous membrane above the level of the ulcerated surface. The strongest argument in favor of the turbercular nature of the destructive process is the fact that vigorous anti-syphilitic treatment not only failed in arresting the disease, but resulted in aggravation of the local conditions and general health of both patients, while the anti-tubercular treatment yielded the most prompt and satisfactory results.

Tuberculosis of Urethra.—Surgeons are familiar with the well-known clinical fact that foreign substances when introduced into the urethra are very prone to travel in the direction of the bladder unaided by any *vis a tergo*. It is reasonable to assume that microörganisms lodged in the meatus are conveyed in a similar manner along the urethral tract and unless they become arrested upon a soil propitious for their growth and development, they produce no symptoms. There can be but little doubt that direct infection of the urinary tract with the bacillus of tuberculosis occasionally takes place in this manner. Primary tuberculosis of the urethra is exceedingly rare, and when it occurs it takes place in a part of the urethral

mucous membrane prepared for the reception and growth of the bacillus by some antecedent injury or disease. Tuberculosis of the urethra must be mentioned especially as an affection which is prone to exist in cases of vesical and prostatic tuberculosis in consequence of a direct extension of the infective process from either of these organs to the mucous membrane of the urethra. It may occur in the prostatic, the bulbous, or any other part of the urethra. It is found more frequently in young females suffering from bladder tuberculosis than in men. It appears in the form of ulcers and is often attended by incontinence of urine. What English has designated as tubercular periurethritis is in reality a tubercular perineal abscess which can take its origin as well from a tubercular Cowper's gland as a tubercular urethral ulcer. I have now under my care at the Presbyterian Hospital a boy, 14 years of age, who about a year ago manifested the first symptoms of renal tuberculosis. In the course of a few months a large tubercular paranephric abscess developed on the left side which was incised but never healed. Soon after he was admitted to the hospital symptoms appeared which indicated that the tubercular process had reached the bladder. A few weeks later a urethritis set in, characterized by a profuse discharge. The meatus presented the same appearance as during the early stages of a gonorrheal urethritis. As soon as the disease reached the urethra incontinence of urine appeared and continued until the acute symptoms subsided. Four guinea pigs were inoculated by injecting a hypodermatic syringe full either into the peritoneal cavity or the loose connective tissue in the groin. All of the animals died in the course of five or six weeks and the postmortem in each instance revealed diffuse miliary tuberculosis. In this case the tubercular inflammation extended from the kidney over the entire urinary tract in the course of a year. Long before the infection reached the bladder and urethra, the tubercular nature of the primary renal affection was established by the detection of numerous tubercle bacilli in the urinary sediment obtained from the centrifuge. Tubercular urethritis gives rise most contantly to retention and incontinence of urine. Owing to the irritation caused by the urinary secretion, which will be voided the more frequently in proportion to the irritation of the bladder present, the inflamed mucous membrane will be kept in a constant state of disease, and the more so as in these situations the tubercular infiltration is not usually eliminated, but on the contrary, steadily increases in quantity, and on this account not only excites catarrhal inflammation in the adjacent healthy mucous membrane, but also affords an increasing impediment at the deepest part of the urethra to the flow of urine, and the most appropriate local surgical treatment only suffices to check in some measure the retention of the urine. Retention eventually leads to incontinence.

Michaut (Sur un cas d'ulcération tuberculeuse de l'urèthre consécutive à une tuberculose rénale primitive. *Bulletin* de la Soc. Anat. de Paris, 1887) observed a case of tubercular ulceration of the urethra in a man the subject of pulmonary tuberculosis. The disease appeared as a hard induration five centimeters behind the meatus which simulated clinically closely a hard chancre. Later tubercular granulations appeared around the meatus and upon the surface of the glans penis. The postmortem revealed tuberculosis of the kidneys, and a descending tubercular process which finally reached the urethra. The part of the urethra affected was indurated and the fossa navicularis was the seat of deep ulcerations. In the differential diagnosis of urethral chancres it is well to bear in mind tubercular lesions which may so closely resemble primary syphilitic infection.

Analécot (*Ann. des Maladies des Organes génito-urinaires*, November, 1893) records a rare case of secondary tubercular ulcer surrounding and involving the meatus, about the size of a ten cent piece. The patient was a boy 14 years old and had been circumcised eight days after birth. The appearance of the ulcer and the absence of induration excluded the idea of a hard chancre. The smooth base, absence of suppuration and the regularity of its border excluded chancroid. It was not painful. The patient had for three years been suffering with bladder trouble. Micturition was frequent, painful, and at times bloody. Although no bacilli could be detected in the ulcer, inoculation with debris taken from it nevertheless produced tuberculosis in guinea pigs, and so demonstrated its tubercular nature. The ulcer had remained stationary for nearly a year.

Ahrens (Die Tuberculose der Harnröhre. *Beitr. zur Klin. Chir.* Bd. VIII, p. 312) succeeded in finding the reports of only four cases of tuberculosis of the urethra in women. It is more common in men, but its relative frequency is estimated differently by different authors. Krzywicki believes that the urethra is affected in 1 per cent. of all forms of tuberculosis and in 17 per cent. of all cases of urogenital tuberculosis. In the majority of cases it is affected secondarily both in the ascending and descending forms of urogenital tuberculosis, and with few exceptions the prostate gland is simultaneously implicated. In exceptional cases it is met with as a primary affection, and in that event is nearly always mistaken for a primary syphilitic ulcer. In the primary form the infection takes place either through the general circulation, or by inoculation, the latter mode of origin was demonstrated experimentally to a certain extent at least by Baumgarten by his experiments on rabbits. As a pathologic curiosity must be mentioned tubercular stricture of the urethra. Such a case is described by Ahrens. (*op. cit.*) The patient was a boy 16 years of age who was at the same time the subject of tubercular coxitis. The stricture could only be passed with a filiform bougie. The patient died six days after his admission into the hospital in consequence of retentio urinæ and rupture of a diverticulum at the base of the bladder. The postmortem showed a caseous exudate upon the surface in the posterior part of the urethra as far as the pars cavernosa. The bladder, testicles, seminal vesicles, ureters, and most of the internal organs were the seat of recent tubercular infection. In primary tuberculosis of the urethra, when the disease is accessible, the most energetic local treatment should be resorted to with a view of eliminating the tubercular material, while its occurrence as a secondary affection to tubercular affections of other portions of the urogenital organs calls for palliation and improvement of the general health of the patient by appropriate treatment.

Tuberculosis of the Spermatic Cord.—The spermatic cord or vas deferens is the connecting channel between the essential organ of generation in the male, the testicle, and the seminal vesicle. It is never the

seat of primary tuberculosis. In tuberculosis of the testicle the disease usually manifests an intrinsic tendency to advance in an upward direction, implicating the cord and, if life is prolonged for a sufficient length of time, eventually reaching the seminal vesicle. The cord becomes enlarged, indurated, and usually nodular, so that when it passes between two fingers it presents somewhat the outlines of a rosary. In some cases the cord enlarges to the size of the little finger. The swelling is either cylindrical, nodulated, or spindle-shaped. The mucous membrane is most thickened, then the muscular coat and last the adventitia. Perforation of the wall leads to tubercular abscess around it. Pain is usually absent and tenderness on pressure slight. In cases of primary tuberculosis of the seminal vesicles the infective process frequently descends along the cord to the epididymis. The surgical interest in tubercular spermatitis centers in the operation for the removal of a tubercular testicle. In all cases in which the cord is affected the inguinal canal should be laid open freely as far as the internal inguinal ring and by gentle traction and the use of dull instruments as much as possible of the cord should be made accessible and removed. It has been shown that with proper care the cord can be liberated in this manner and excised to a point very near the seminal vesicle.

Tuberculosis of the Seminal Vesicles.—The seminal vesicles are occasionally the seat of primary tuberculosis, but in the majority of cases the disease is associated with similar affections of other parts of the genital organs, most frequently the testicle and prostate gland. Guyon believes with Lancereaux that the tubercular process begins very frequently in the vesiculæ seminales. Of twenty-six autopsies made with reference to show the frequency with which the seminal vesicles are primarily affected, he found this to be the case in two cases; in ten cases these were involved, but the prostate was simultaneously affected; in one case the prostate alone was implicated. Of thirty-six cases of disease of the seminal vesicles collected by Dreyer (*Beitr. zur Pathologie der Samenbläschen.* Inaugural Dissertation Göttingen, 1891), in eighteen the affection was of a tubercular nature. Of these cases one-half occurred in persons over 40 years of age. In three cases the vesicles were primarily affected, and in twelve the disease presented itself at a stage in which the organs were hard and nodular without any softening, while in six cases it had passed into the second stage characterized by caseation and liquefaction of the caseous material, that is, the formation of tubercular abscesses. In three cases the disease had extended beyond the capsule of the gland and had invaded the pelvic connective tissue. In one case the disease was complicated by tubercular peritonitis. Pulmonary tuberculosis was absent only in two cases. As a rule, different portions of the urogenital tract and distant organs were found implicated. The seminal vesicles can be palpated most satisfactorily by placing the patient in the knee-elbow position. In tuberculosis of one testicle the seminal vesicle on the corresponding side is frequently found affected, and in tuberculosis of both testicles the subsequent affection of the seminal vesicle is often bilateral. The existence of hard nodules in different parts of the organ which are not very tender on pressure is very suggestive of the tubercular nature of the disease. The close proximity of the seminal vesicles to the peritoneum in case these organs are tubercular must occasionally lead to peritoneal tuberculosis.

A number of surgeons have made bold attempts to eradicate one or both seminal vesicles by operative interference. Ullmann reports from Albert's clinic a case of extirpation of the tubercular vesiculæ seminales in a patient 17 years of age, who had been castrated for tubercular orchitis. Zuckerkandl's semilunar incision between the scrotum and anus was made and the space between bladder and rectum exposed, and the posterior wall of the former made prominent by the use of a steel sound. The vesiculæ seminales and vasa deferentia were now freely exposed and could be readily dissected out as well as the upper left angle of the prostate which contained a small abscess. Only the left, apparently healthy vas deferens was left. The hemorrhage during the operation was free, and this, as well as the secondary hemorrhage which occurred on the evening of the same day, had to be arrested by a resort to the iodoform gauze tampon. Healing of the wound took place quickly with the exception of a small urinary fistula. The fistula was supposed to have been caused by division of the ejaculatory duct in the substance of the prostate. The patient left the hospital with a small urinary fistula and claimed to have experienced erections at different times. Ullmann regards primary tuberculosis of the seminal vesicles and unilateral secondary infection in the course of testicular tuberculosis as legitimate indications for a radical operation. In two cases of secondary tubercular vesiculitis Roux (extirpation de la vésicale séminale. Congrès Francais de Chir., 1891) followed castration for tuberculosis of the testicles by excision of one of the seminal vesicles which had become involved by the tubercular process. After the removal of the diseased testicles and suturing of the wounds he brought the patient into lithotomy position, lying on the affected side, and made an incision 2–3 cm. from the median line as far as the ischium, exposing the rectum and penetrating finally as far as the affected vesicle. By pressure with the finger in the rectum from above downward the edge of the vesicle was made to appear in the upper portion of the wound. By the use of a traction ligature the vesicle was drawn further down, separated, and with the stump of the vas deferens, was divided close to the neck of the bladder. The patient recovered from the immediate effects of the operation, but the remote results of the procedure are unknown.

Weir (*Medical Record*, Aug. 11, 1894) reports a case in which he removed both seminal vesicles through Zuckerkandl's transverse perineal incision. Schede (*Deutsch Med. Wochenschrift*, Feb. 15, 1894) successfully removed a tubercular seminal vesicle and cord. He prefers the method of Rydygier, which consists of a lateral incision extending along the border of the sacrum to that of Dittel, which is the same as that which Schede employs for extirpation of the prostate, namely Zuckerkandl's transverse curved perineal incision.

Perhaps the most complete operation for tubercular vesiculitis has been performed by Fenger. (Personal communication.)

The patient was 22 years of age with a good family history. One year before his admission into the German Hospital he contracted gonorrhea which persisted for six weeks. During the latter part of this disease he complained of rheumatic pains beginning in the left foot and passing from there to the hip on same side, and later to the left knee and right ankle. At first the joints were not swollen, but about a week later the knee-

joint began to swell and he was confined to his bed where he remained for two weeks. At the end of this time he recovered almost completely from the joint affection. In November, 1894, he noticed that the left testicle was swollen, the swelling increased slowly until in about four weeks it was as large as the fist of an adult. When the patient came under Fenger's care the left testicle was firmer and slightly larger than the right. The epididymis was hard and nodular and slightly tender to pressure. Digital examination of the rectum showed no enlargement of the prostate, but the left seminal vesicle was felt as a hard mass, not tender to pressure. Reducible right inguinal hernia. General health not impaired. Operation April 25, 1894, in two steps, first removal of testicle and accessible part of the cord, and second, extirpation of the seminal vesicle on the same side through Roux's incision. In removing the cord after previous isolation of the testicle, the incision was carried as far as the internal inguinal ring, where the vessels were tied and the cord teased out of its canal as far as possible before dividing it. The wound was packed with iodoform gauze and sutures introduced, but not tied until after the completion of the second step of the operation. During this part of the operation the patient was turned on his left side and the knees drawn up and rectum lightly packed with iodoform gauze. Roux's incision was then made on the left side of the rectum four inches in length. A sound was introduced into the bladder to serve as a guide in making the deep dissection. The seminal vesicle was located by the finger in the rectum as an olive-shaped body. Access to the vesicle was difficult owing to the small size and great depth of the wound. Bleeding was not as profuse as was expected and was easily controlled by the use of large hemostatic forceps. The seminal vesicle was found close to the bladder and was drawn downward with Museux's forceps. During the dissection the prostate and levator ani muscle were seen and recognized. The vesicle was not encapsulated, as was anticipated, and was accidentally opened and the contents of the tubercular abscess escaped. By careful dissection with Kocher's director and scissors the vesicle, with about 1½ inches of the vas deferens, was removed without injuring the bladder or opening the peritoneal cavity. The prostate gland was found slightly enlarged. In the left lobe a whitish spot was seen which was incised and proved to be a small tubercular abscess. The abscess cavity with a portion of the lobe of the gland was excised. The wound was sutured and drained at each angle with tubular and gauze drains. The first wound was then closed and drained in a similar manner. Duration of operation two and one-quarter hours. The wounds healed kindly and the patient remains in perfect health, more than a year after the operation.

This case appears to show more conclusively than any other on record that a timely operation for secondary tuberculosis of the seminal vesicle, following an ascending tuberculosis of the testicle, may succeed in preventing the extension of the disease to the bladder and other portions of the urinary tract, and may even result in a complete and permanent cure. If the surgeon intends to remove both seminal vesicles, there can be but little doubt that Zuckerkandl's incision is the safest and renders the diseased organs more accessible than any other. The operation is greatly facilitated by placing the patient in the ventral position with the pelvis elevated.

Tuberculosis of the prostate.—Sir Henry Thompson (The Diseases of the Prostate, their Pathology and Treatment, London, 1861, p. 283) is of the opinion that the prostate is never the seat of primary tuberculosis. He says: "It would appear that at no period of the disease is the prostate affected alone. Some other part of the genito-urinary tract is the preliminary seat of the affection. In most cases the deposit appears to take place first in the kidney, or, at all events, to be present there in an early stage. The organs next in order of liability to the disease, among the genito-urinary group, is the testicle. Thus in 18 cases collected by myself, in which the results of postmortem inspections have been recorded, tuberculosis of the kidney is reported in 13, and of the testicle in 7. The state of the lungs has, I suspect, not always been recorded, but in 10 of these cases they are stated to have been diseased."

Marwedel (Aus der Heidelberger Chirurgischen Klinik des Prof. Czerny. Ueber Prostatatuberculose. *Klin. Beiträge*, Bd. ix, p. 537) has written a valuable monograph on tuberculosis of the prostate in which he describes four cases that occurred in Czerny's clinic, in two of which the disease appeared as a primary tuberculosis of this organ, and both were successfully treated by laying open and curetting the fistulous tract. In the other two cases temporary benefit resulted from incising the periprostatic abscess in front of the rectum and through the incision nearly the whole sequestered gland could be removed. In these cases the destructive process had extended to the urethra, a considerable portion of which was involved. Another fatal case was not subjected to operative treatment; it was complicated by pulmonary and testicular tuberculosis. These, as well as other cases of a similar nature that have been recorded, prove that the prostate may become the seat of primary tuberculosis. Tubercular disease of the prostate is as a rule met with in young adults. Out of 26 cases collected by Socin, 13 were less than 30 years of age. It can, however, occur in men advanced in years. In one of Socin's cases the patient was 72 years old, who was suffering from the consequences of an enlarged prostate, and several months later the symptoms revealed extension of the tubercular process from the prostate to the seminal vesicles, bladder and ureters, resulting in death after a long period of intense suffering. The primary nodules are situated first in the vicinity of the tubules (Rindfleisch), and not, as was formerly supposed, in their interior. By confluence and caseation of the miliary gray nodules large masses and cavities are formed which may be found in one or both lateral lobes, while the middle lobe is more rarely affected. The softening of the caseous material leads to the formation of tubercular abscesses which may rupture into the urethra. In a case observed by Adams the abscess ruptured at the same time externally in the perineum. Socin observed two cases which terminated in rupture into the bladder and in one case into the peritoneal cavity. The abscess may also discharge itself into the rectum. Much less frequent than softening is calcification of the tubercular mass with arrest of the disease. It is difficult to ascertain whether or not tuberculosis of the prostate appears as a primary affection. Besides the cases cited above Béraud and Pitha have observed cases in which this appears to have been the case. Postmortem examination, however, usually reveals additional tubercular affections in adjacent or distant organs. In cases of tubercular abscess of the prostate it is difficult to ascertain the exact chronologic order in the presence of additional tubercular lesions. Socin saw two cases of what appeared to be primary tuberculosis of the prostate. The patients were respectively 28 and 30 years of age, both of whom had contracted gonorrhea before symptoms of prostatitis appeared. Examination revealed well-marked chronic prostatitis without additional tubercular complications. One of the patients died of an acute renal affection of only ten days' duration. The postmortem showed disseminated cheesy foci in both lateral lobes of the prostate, ulcerative nephritis and miliary tuberculosis of the peritoneum, the right pleura and liver. In the other case, months after the appearance of symptoms indicative of prostatitis and vesical catarrh,

hectic fever set in with symptoms pointing to renal disease which rapidly proved fatal. The prostate was found completely destroyed and its place occupied by a tubercular abscess which communicated with the urethra. The vesical mucous membrane was the seat of numerous small ulcers, and at a point corresponding with the orifice of the left ureter, a deep ulcer; the left kidney was greatly enlarged; in the pelvis large ulcers; in the substance of the kidney many small abscesses containing cheesy material. In two other cases the tubercular prostatitis occurred in phthisical patients. Socin is of the belief that in all these cases the prostatic disease was primary. Of 26 cases of tuberculosis of the prostate collected by Socin, of which 6 came under his own observation, the postmortem showed in 24 tubercular disease in other parts of the genito-urinary organs, and only in 2 cases tuberculosis of distant organs, the lungs and bones. Most frequently the bladder and kidneys were found implicated, less frequently one or both testicles. In one case in which the epididymis was unquestionably the primary seat of the tubercular process, the lobe of the prostate on the corresponding side was similarly affected.

Symptoms.—There are no symptoms which are, strictly speaking, characteristic of this affection of the prostate. Undue frequency and pain in passing urine, occasionally blood in the urine, and at times the signs of cystitis, are commonly experienced. Wasting and extreme debility slowly show themselves. The symptoms present many things in common with other forms of chronic prostatis. Only in cases in which the disease is complicated by tuberculosis of other organs are observed hectic fever, rapid loss of strength, and marked emaciation. Adams has called attention to the similarity of the symptoms with those produced by stone in the bladder. Catheterization is always very painful and should not be unnecessarily resorted to. In one case Socin observed soon after it septic cystitis. Hematuria is often present, but of no particular diagnostic value. Incontinence of urine, which often appears during the advanced stage, indicates extension of the disease to the sphincter vesicæ muscles. Marwedel found tubercle bacilli in the urine in all the four cases reported from Czerny's clinic. In one case they were also detected in the urethral discharge.

Treatment.—Czerny obtained good results in two cases which had terminated in abscess by laying open the fistulous tract and vigorous use of the sharp spoon. In cases in which the disease has not advanced to abscess formation he advises Zuckerkandl's perineal incision for exposing and removing the caseous foci. Sir Henry Thompson advises conservative treatment, avoiding instrumentation which, he claims, provokes irritation and aggravates the disease without conferring upon the patient any benefit whatever.

Horteloup (De la Tuberculose génitale. *Gaz. méd. de Paris*, Nov. 25, 1892) recommends in the treatment of isolated tuberculosis in any part of the genital tract, with a view of preventing further extension of the disease, the injection of a few drops of Lannelongue's solution of chlorid of zinc. In two cases of tuberculosis of the prostate he made the injections through a boutonnière incision, but the communication was made too soon after the treatment was suspended to judge of its curative effects. During the early stage of primary prostatic tuberculosis parenchymatous injections of iodoform glycerin emulsion would appear to be indicated and might possibly prove a valuable addition to the treatment of this obstinate and unpromising affection.

(To be continued.)

A NOTE ON STENOSIS OF THE CERVIX AS A FACTOR IN UTERINE DISEASE.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

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CHICAGO, ILL.

Twenty years ago, the subject of this paper was one of the topics of leading interest in gynecologic circles. The literature of the day abounded with learned and exhaustive treatises upon the pathology and treatment of the affection.

The reputations of many of our pioneer gynecologists were founded largely upon their successful methods of operating for stenosis and the instruments they invented to correct the condition, as to-day they often depend upon the technique of the major surgical procedures.

J. Marion Sims, Montrose A. Pallen, Sir Spencer Wells, Savage, Greenhalgh, Barnes, Graily Hewitt, Sir J. Y. Simpson, Peasely, Emmet, Routh and Aveling, all these names and many more are associated with the rise and progress of the phenomenal career of a disease which is scarcely noticed in modern literature.

For, notwithstanding the amount of literature that was formerly written upon this subject, the hundreds of operations recorded by older gynecologists, and the nicely adapted instruments that remain as evidences of the reality of stenosis of the uterine cervix, there are some modern authorities who go so far as to deny the very existence of this affection as an anatomic fact.

Between this absolute negation and the over-zealous devotion of years past there is a happy medium wherein we may assign this undeniably important condition to its rightful place as a causative factor[1] in much of the gynecic disease which abounds.

Stenosis of the cervix is anything but a rare affection.

The text-book classification names the congenital and acquired forms. We are getting to know, more and more, that nature makes few mistakes, and that the abnormal conditions to be found at birth are extremely rare. Malformations of the *internal* organs of the fetus are still more rare than the various orthopedic lesions of the exterior body.

Such cases as we have been in the habit of listing as congenital are for the most part merely the persistence of the normal natal condition, and should properly be called acquired.

This brings us in accord with the modern movement toward the development of preventive medicine. It may be said without fear of contradiction that whatever may be acquired can be prevented.

This puts a great responsibility upon specialists in all fields, and enlarges the scope and province of each until the dividing line is nearly lost. Particularly is this true of gynecology in its relation to pediatrics and to obstetrics, since, with the exception of the rare malformations, and diseases due to specific infections and unusual traumatisms, nearly all gynecologic diseases have their origin in the physical errors of child-

[1] Clinical Gynecology, Keating and Coe, page 201.

hood and puberty, and the accidents or mismanagement of the puerperium.

I have said that stenosis of the cervix is not rare. It is a narrowing of the caliber of the canal, and may be situated at the external os, the os internum, or may include the whole extent of the canal.

This condition is recognized as causing sterility and dysmenorrhea, by offering a mechanical obstruction to the entrance of the fecundating element, and by preventing the free discharge of the menstrual fluid. It is of its importance in this last respect that I wish particularly to speak, and to call attention more forcibly to our obligation to the science of prophylaxis.

Whether, as some hold, menstruation has been developed in the human female as a result of civilization, a periodic protest against the progressive evolution of the higher attributes of the race at the expense of the lower, or whether it is indeed a higher manifestation of a function associated with the reproductive system in almost all varieties of animals, it is generally allowed that any abnormal disturbance of this function is detrimental to the health of woman, and a fruitful cause of gynecologic disease; particularly does stenosis give rise not only to functional derangements and actual structural disease in local organs, but various neuroses, frequently of a most serious character.

Dr. Montrose A. Pallen, in a prize essay read before this ASSOCIATION in 1867, enunciated these propositions: "1. Menstruation irregular in its character is always coincident with uterine disease. 2. All uterine abnormalities tend to a deformity of the organ, either in its neck or in its body, or both."

Ten years afterward the same writer gave to the New York County Medical Society a résumé of the subject, in which he states: "These propositions are correct in the main, without being absolutely and invariably true, particularly with regard to the first, as irregular menstruation may depend upon systemic causes, wherein the uterine disease is but functional and symptomatic.

"However, so correct is the principle that we may accept it without cavil, when we remember that the healthy functioning of any organism necessitates a healthy condition for its performances.

"No unhealthy cause can produce healthy effects; therefore from a uterus abnormal can no healthy menstrual flux proceed."

The pathology of Pallen and Schroeder is nearly thirty years old, but it is still so acceptable that I quote it here:

"The uterus undergoes involution every month during menstrual life, and if this process be retarded in consequence of congenital defect of development, or from pathologic accident, the woman's condition is in no wise ameliorated, unless pregnancy should supervene or art interfere.

"After a longer or shorter period of monthly agonies, the tissues of the cervix become indurated, frequently atrophied, the recently formed connective tissue becomes cicatricially retracted, the vessels become imperforate and the young mucoid connective tissue becomes firm and infiltrated.

"The uterus again diminishes in size, and on section exhibits an exceedingly firm, almost cartilaginous tissue, which creaks under the knife and has an anemic, cicatricial appearance. Whenever this condition exists, either in the intra-vaginal cervix or at the internal os, we may expect to find stenosis of the canal with a very small os externum."

A cervix, therefore, presenting these peculiarities, must exert a very injurious influence on a woman's health in so far as it depends upon the regular and normal performance of the menstrual function.

In a uterus which seems to have a fairly free outlet at the cervix, the hyperemia which accompanies the monthly molimen may bring the walls of the cervix so closely into apposition that the flow is materially retarded and the secretions more or less retained.

Retention of the secretions gives rise to an elaborate sequence of gynecologic evils, chief of which are endometritis, metritis, salpingitis, oöphoritis, etc.

When we observe the sufferer from chronic endometritis with her long train of general and special ills; her dyspepsia, neuralgia in different localities, headache, backache, anemia, her many nervous symptoms and her very natural mental depression, we can not but be convinced of the grave importance of all causative factors which can be traced in the etiology of her trouble.

In the milder types we know what these conditions mean, either a prolonged course of routine and palliative treatment, or the more radical surgical procedures.

In the graver degrees where there has been extension to the tubes or ovaries, oöphorectomy, ovariotomy or hysterectomy may become necessary, to remove the local effects of disease, but not always with hope of the reëstablishment of normal health in a constitution injured and disturbed by long presence of diseased conditions.

In other branches of medicine rapid strides have been made of late in the theories of the causation of disease.

Ophthalmology, for instance, has invaded the schools and with the help of public sanitation has insisted upon the better lighting of study rooms and public buildings.

The public are now looking to the medical profession with awakened interest as the conservator of the nation's health, and are offering cordial encouragement to the progressive effort for better conditions of physical life.

In our large universities there are already great and liberally endowed departments for the study of physical and sanitary problems, and the educational departments are no longer content with the old system of cramming the head with a conglomerate assortment of samples of many kinds of knowledge.

Instead, there is instituted the study of psychometry and psychology, with physics and the education of the child practically begins back in the embryonic period. Shall gynecologists be looked upon as a class who exist merely to batten on the ills of womankind, and who find their excuse for being, in the evils resulting from ignorance of the laws governing the hygiene and development of the female generative organs?

The place of rightful occupation for this specialty of ours is the highest we can hope to attain, and no higher could be desired, as custodians of woman's health and the leaders in the advance movement for improving all social and educational conditions which are mainly operative in the production of disease. To accomplish the needful reforms in this direction we must insist upon the better hygiene of puberty. In this I am convinced we would have generous public

recognition and coöperation. There is among the higher educational circles already a tendency to demand for girls the same physical advantages that are in vogue in our boys' colleges. But the higher private institutions can reach but the outer edge of this universal necessity. In our public schools and workshops the girls of 12 to 16 years of age are still plodding many times a day up and down long flights of stairs, sustaining the working hours of the day with food into which little real nutritive value enters.

They are still housed up in over-crowded, ill-ventilated apartments, when they should be breathing free draughts of vitalizing air and exercising their growing muscles in unobstructed sunshine.

I have said that at this period nature is supremely concerned with the development of the generative organs.

In the rapid transition from childhood to maturity the activities here generated demand full general nutrition and conservation of the entire physical constitution.

But at this period the growing woman is pushed to her utmost to support the intellectual and emotional faculties.

The rich current of the young circulation is turned into the channels opened by music, science and art, and being insufficient for these, the physical organs must suffer positively or relatively.

It is at this age, too, that the feminine organism begins to come under the dominance of the destructive power of custom in conventional dress and manners.

The first corset is put on and the growing body thereby constricted and deprived of the necessary freedom of respiration and circulation.

Is it any wonder that the process of pelvic development is often summarily interfered with and the infantile uterus with its small body and long conical cervix which should have changed entirely in contour and dimensions, remains as it was, with elongated, constricted canal and partially developed tissues inadequate to perform the functions so soon to be demanded of it?

In the radical changing of these conditions lies the rational basis of the treatment of cervical stenosis. This is a most striking instance of the importance of preventive treatment, and I appeal to my colleagues to use the same diligence to bring about a better environment for the developmental period of puberty as you have done in eradicating the causes of the once dreaded puerperal infections; the same zeal you have shown in establishing upon its present high plane the greatest prophylactic factor in modern surgery, cleanliness, and as our colleagues in general medicines are showing in their struggle for the prevention of all contagious and other diseases which arise from the wide-spread ignorance and neglect of nature's laws.

34 Washington Street.

DISCUSSION.

Dr. Wm. A. B. Sellman, Baltimore—At the last meeting of this Association I discussed this subject, and the relation which it bears to other pelvic diseases. I thought at that time that diseases of the cervical canal between the external and internal os were very often the cause of most serious trouble. We find many young women suffering from painful menstruation due to retained menstrual fluid. If we do not recognize painful menstruation as due to mechanical obstruction it is impossible to relieve it. At the last meeting I spoke of a means of curetting these cases, and I said that dilatation was of little or no avail, because the tissues would contract again, so that the good accomplished by dilatation is overcome by the involution which takes place after the next menstruation. My idea in these cases is to remove a portion of the tissue. The tissue is undeveloped on account of various causes, due to bad nutrition and bad habits during girlhood. The question is how to remove the diseased membrane which brings about the various conditions. It is not normal mucous membrane; it is converted into denser fibrous tissue, and my method is to remove it, not by dilatation, but to ream it out by the reamers which I showed at the meeting last year, and my results have shown that the dysmenorrhea is overcome. Girls who have suffered month after month have been relieved after the second or third month. The canal is sensitive after the removal of this tissue, but after the second or third month perfect relief is secured, provided a reamer large enough has been used.

Dr. I. S. Stone, Washington, D. C.—I think there are many cases of dysmenorrhea that are not relieved or cured by dilatation. For instance, a young girl, 19 years of age, in which dilatation was carried to such an extent that I could introduce my index finger and it would pass through the internal os. She has no apparent ovarian disease, yet suffers very much every month. I fail to see why Dr. Sellman's instrument is any better than a curette in skillful hands. With a sharp curette we can remove the same amount of tissue, whether we do it in the same manner or not.

Dr. Rufus B. Hall, Cincinnati—I think the most essential and difficult point to determine is the selection of cases in which we expect to afford relief either by dilatation of the cervix or by the operation proposed by Dr. Sellman. If we expect to cure dysmenorrhea by dilatation of the cervix or reaming it, as he terms it, by making the cervical canal larger in all cases, I think we will be disappointed in our results. It is not always possible to say that in a given case there is not local trouble above the cervix as a cause of the dysmenorrhea, and the narrow cervix of the patient may only play a minor part in the causation of her suffering, and it is not always possible to say that the cervix has nothing to do with the patient's suffering. We must go back and find out where the real trouble is. It may lie in non-development of the parts. I can see where we might, by curetting away sufficient cervical tissue to leave a large opening, bring about a still worse condition than we would have following dilatation of the cervix or the reaming-out process by the formation of cicatricial tissue. Therefore, in either operation, dilatation or the reaming-out process, or stretching the cervix, can we expect to relieve all of these cases? I do not think it is possible to differentiate every case before we operate, that is, to exclude trouble above the cervix, or a neurotic condition which has been the cause of the patient's suffering.

Dr. Newman (closing)—There is little more to be said. Heretofore the treatment of stenosis of the cervical canal has been considered by gynecologists as unsatisfactory. It is true that we accomplish a great deal by operative procedures and by instruments judiciously employed, but the condition returns unless auxiliary treatment is instituted. The object of the paper was to get behind the local treatment and remedy the evil before it began. This is the first responsibility of the profession.

The little instrument that I have passed around is designed for the class of cases we have with us, and presumably will have, in spite of any precautions, for all time. It has a purpose, but it is not intended by any means to supplant other treatments that are now in vogue.

A Lesson in Prognosis.—Boston Mamma: "Suppose you have four bunches of grapes, Willie, and eat three, then what would you have?" Boston Boy: "Appendicitis." — *Up-to-Date.*

HOW TO REMOVE PUS TUBES WITHOUT RUPTURE.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5–8, 1896.

BY I. S. STONE, M.D.

WASHINGTON, D. C.

The contents of pus tubes may not be infectious, but it is desirable to avoid the usual soiling of peritoneal and wound surfaces with any kind of pus. It is, therefore, in the opinion of the writer, better to make a longer incision, to tie the ovarian and ovaro-uterine arteries and free the specimen at one or both ends or sides before attempting enucleation.

The method about to be described can be used in any case; the simple ones are always easy work, but it is in the difficult cases, where there are many adhesions and a large quantity of pus present, that the writer has found the greatest satisfaction in adopting the following plan:

METHOD.

Clamps are placed upon one of the tubes, closely hugging the uterus. The clamp may embrace about one inch of the broad ligament in its bite. The ovarian artery is either tied or clamped as near the pelvic wall as possible. A ligature may be placed on each severed end or placed before section if preferred, the incision to be made between these points. No bleeding of importance can occur after this, while the surgeon can leisurely enucleate the tube or ovary with contents safely, and with infinitely greater ease than after the ordinary fashion. In many instances the appendages can not be as readily rolled out from behind as from the front, and the separation from the broad ligament is often easier than from the bowel if strongly adherent. But the most important assistance given the operator by this method is the great amount of space afforded. There is plenty of room to work, as the tube comes right up when separated from the uterus. Quite naturally many pus sacs rupture easily, and this method will not prevent soiling the peritoneum in every instance, but that it will do so in most instances I know from frequent observation. Finally, a very serious defect in the technique of many operations is found in the large and infectious stump of the tube left after removal of the adnexa. Here an exsection of the cornua is demanded and is provided for in the beginning of the operation. The ovaro-uterine artery is ligated, the forceps removed and another deeper ligature used if much bleeding occurs. Then the exsection and suturing of the cornua is rapidly and easily done. The same technique is used on the remaining side and needs no further demonstration. The operation is easier in the Trendelenburg posture with a good light. I have used no flushing or drainage in any case of this kind for the past five months, and have had no sepsis in the wound or rise of temperature, or peritonitis or other trouble consequent upon this technique. In some cases rupture will occur in spite of the greatest care, but if a sponge is properly placed all the pus can be caught and flushing and drainage avoided.

SUMMARY.

This methed gives more space for careful enucleation. The larger blood supply is tied off at once. Smaller silk or catgut can be used as no *en masse* ligatures are used. The ligatures and sutures are not infected. No sinus will be formed. There can be no possible danger of hemorrhage after operation. No ligatures can slip. If rupture is avoided there is no need of flushing or drainage save in very rare instances, when time can not be given to careful suturing, which must be the rare exception. It facilitates enucleation by affording another point of cleavage, namely, from the anterior surface of the pus sac. Finally, it facilitates exsection of the uterine cornua.

The sketch gives a good idea of the steps of the operation and the appearance of the uterus and broad ligament after operation. The uterus can be removed in addition to the adnexa if the surgeon so desires. The specimen here exhibited was removed on the 20th ultimo. It is very large and came from the left side. The right tube was small and a small amount of pus escaped before I knew I had a pyosalpinx to deal with. The patient recovered without trouble of any kind.

DISCUSSION.

DR. JOHN M. DUFF, Pittsburg—I feel that with our modern experience in dealing with pus tubes, especially where the infection is of gonorrheal origin, that the patient would have been in less danger of infection and the subsequent history of the case would in all probability have been much better if these pus tubes had been removed through the vagina.

DR. CHARLES P. NOBLE, Philadelphia—I think all who are operating on pus tubes after the method of Tait, and who have adopted this method or one similar to it, can appreciate the great advantage which both the patient and operator have in such a method. I have been operating very much in this way for a year and a half and have been able to remove the great majority of pus tubes without rupturing. The method I have used is the same in principle. I agree with the author of the paper as to the facilities with which we can remove pus tubes in the majority of cases by this method without rupture. The author of the paper said nothing about special precautions except using a sponge in case the pus tube be ruptured. My own practice is to pack off the peritoneal cavity with folds of gauze, also to have some dry gauze packed behind the pus tube, so that should it rupture we will be in a position to get any pus that should be discharged. It is seldom necessary to rupture pus tubes unless they are down in Douglas' pouch. There are cases in which this technique is not feasible. We would necessarily rupture a certain percentage of them. Frequently I find it not only necessary to take out the pus tubes but the uterus as well. It has been said that leaving the uterus behind causes the patient no special difficulty. My own experience has been different from that of many writers on this point. By ligating the uterine arteries as well as the ovarian, we can do without drainage, when otherwise we would have to employ it.

DR. L. S. MCMURTRY, Louisville—I call the attention of the Section to one point in connection with the class of cases under discussion, which I am sure all familiar with them will recognize as the most difficult that are encountered in operations—cases of suppurative salpingitis and complications that result are certainly most difficult of all cases in pelvic surgery for operation; and they present, at the same time, the very greatest variety of almost any class of cases we have to deal with in an operative way. The number of cases of suppurative salpingitis must be comparatively limited where the method that Dr. Stone has described and practiced so successfully can be applied. It is very common for these adhesions to be so firm that you can almost lift a patient off the table by them. It is also common for adhesions to the bowel, to the uterus, to the floor of the pelvis to be very strong, and these refinements of operative technique just described are difficult of application. If we endeavor to apply Dr. Stone's method generally

we will meet with many disappointments. I am sure that any technique which contemplates dealing with large accumulations of pus in the pelvis, with the degenerations and cheesy deposits to take place, and dispense with irrigation and drainage will be followed by a large number of disasters. Furthermore, the very character of the tissues themselves that are rotten from disease, in a large proportion of cases, forbids such a nice dissection as has been described.

Dr. E. E. Montgomery, Philadelphia—This is a class of cases that render pelvic operations much more difficult than any with which we have to deal, but in dealing with such cases I should much prefer to remove the pus tubes through the vagina rather than by the abdominal method. We have in these cases large collections of pus, where the tube from its weight gravitates into and fills up the pelvis, is shut off more or less from the general peritoneal cavity, and can be entered and reached through the vagina prior to the operation for the removal of the mass itself. Having in this way thoroughly evacuated and irrigated the cavity, we have then to deal with the tubes, shell out the sac and the uterus itself. The reason why I prefer to go through the vagina in the treatment of these cases is that we are not only able to remove the tubes and ovaries but also the uterus. After removal of both ovaries the uterus is no longer an organ of any special advantage to the individual. More than this, the trouble has originated in the uterus, and from it the disease has extended to the tubes and ovaries, and the increased connective tissue results subsequently in a decrease in size of the organ, with more or less contraction of the nerves in the uterine walls. Patients frequently, after successful removal of the ovaries and tubes, suffer for months and perhaps years. The uterus then should be removed along with the ovaries and tubes in these cases.

Dr. R. S. Sutton, Pittsburg—There is no doubt but that the method which Dr. Stone has illustrated here is an improvement over the method of Tait in getting under the pus tube and shelling it out, when prolapsed and adherent, but does it follow that the pus contained in these tubes is very frequently infectious pus. Any gentleman who has endeavored to find the gonococcus in pus following gonorrheal infection will remember how often he has failed. He will often fail to find either the staphylococcus or the streptococcus. He may find, as Etheridge has done, the pneumococcus occasionally, or the bacillus coli communis. I endeavor, when I am operating in a case of pus in the pelvis, to have a bacteriologist in the operating room, give him a little of the material removed, wait a moment or two and then he tells me whether there are any pus producers found. If there are no pus producers I shut the cavity up. If there are pus producers in the cavity and you do not insert a drainage tube, you will lose your patient. The man who does the operation by the vaginal method under these circumstances will not lose his patient.

Dr. Noble tells us that he takes out the uterus in these cases, but tells me that he leaves the cervix in. That is not taking out the uterus. It is amputating the uterus at the supra-vaginal junction, and amputation of the uterus at the supra-vaginal junction and total extirpation of the uterus are two different things, mechanically and pathologically.

Dr. J. W. Bovee, Washington, D. C.—I have found in some of these cases that there is a great deal of exudate around the outer end of the pus tube or around the ovarian artery, and sometimes there is danger in ligating the outer end of this mass in the womb first. I operated in this way recently and after I had ligated the stump containing the ovarian artery and had cut it off, grasping the other end with the forceps, I found I had cut off the ureter. It was in the stump. In separating the adhesions the ureter had been lifted up. I had nothing left to do but to take off the ligature, extirpate beyond the ureter and do an end-to-end anastomosis.

Dr. Howard A. Kelly, Baltimore—My plan in the removal of pus tubes is, in all of those cases where there is a pus sac, to aspirate and empty it as much as possible; then free the tube and surround it with gauze packing made of many thicknesses to prevent further contamination during the handling. In the rest of the enucleation I take out the tube. If the other side is diseased I take out the other, with it by supra-vaginal amputation. But I rarely do that. The importance of this matter hinges on the bacterial contents of the tube, and while in all cases we ought to be very careful, the dangers of contamination are slight. Two years ago, in January, without knowing similar work was being done on the other side of the water, I had a microscopist in my operating room to examine under the microscope any pus which appeared to contaminate the peritoneum in any way. If no microörganisms were found, no drainage. If the gonococcus was found, no drainage. If found abundant, probably staphylococci or streptococci, drainage in all cases.

Dr. A. Vander Veer, Albany—I do not intend to discuss this excellent paper, but I feel like asking Dr. Stone if he has examined the contents of this tube. (Tube on exhibition in Section.)

Dr. Stone—I have not.

Dr. Vander Veer—Are you absolutely sure it contains pus?

Dr. Stone—I am. I know it does.

Dr. Vander Veer—It looks to me like a hydrosalpinx. In operating for pus within the pelvis, I have no reason to deviate much from the method of operating in these cases, as I do nearly the same operation that I did years ago. We must remember that this is one of the simplest forms of pus tubes we have to deal with. The adhesions are not so strong but that you can loosen the tube. If one could have a bacteriologist present to tell him the kind of microörganisms that are found it would help matters very materially. But these cases do not have much bearing upon the serious cases of pus tubes that have gone on for two or three years and in which you have extensive adhesions to the intestines, to the rectum, and a long-standing condition of perhaps recurrent pelvic peritonitis. When you attack these cases you have something far more serious to deal with. This operation must be limited to few cases. There are not very many cases in which the doctor will be able to turn out so neatly such a beautiful specimen as he has presented here.

Dr. Rufus B. Hall, Cincinnati—This technique can be carried out only in exceptional cases. We can remove large pus tubes easier than smaller ones which are imbedded in adhesions in the cul-de-sac. We all know the great danger of secondary hemorrhage after these operations, particularly in desperate cases of suppuration. Several years ago I had to reopen the abdomen of a patient on account of hemorrhage coming on. She had been vomiting for some ten or twelve hours after operation. The case was one of large pus tubes and the pedicle was half cut off. In all of those cases where the tissues are soft, instead of transfixing the pedicle I place a ligature on the outer side of the tube and ovary, including the artery from the pelvic side, then another separate ligature beside the uterus, then I feel sure that the possibility of secondary hemorrhage, from slipping of the ligature, or cutting of the pedicle from tension on it will be obviated.

Dr. Stone—When I first began to operate on these cases my technique was not as good as it is now. I do not drain as much as I formerly did. If we can dispense with drainage in these cases it is very desirable.

In reference to the remarks made by Dr. Kelly, I will say that if I can remove a vicious, malignant abscess without soiling the peritoneum, I do not care whether a bacteriologic examination is made of its contents or not. If we have an infected pus tube, I think it is difficult to enucleate all of the so-called infectious germs or germs of any kind. There is more or less shock following irrigation and handling of the intestines which is necessary in every case. I believe I am correct in saying that all pus cases are not infectious.

THE PRESENT STATUS OF ECTOPIC PREGNANCY—A SURGICAL DISEASE.

Read in the Section on Obstetrics and Diseases of Women, etc., at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5–8, 1896.

BY WILLIS G. MACDONALD, M.D.

ALBANY, N. Y.

The surgery of ectopic pregnancy is mature rather than old. It is little more than thirteen years ago that Mr. Lawson Tait first deliberately performed an abdominal section to rescue a woman dying from a ruptured ectopic pregnancy. The influence of this triumph in surgery is immeasurable. The number of lives saved is innumerable. The literature of the subject in text book, transaction, monograph and journal is stupendous. Methods of operation have been so far perfected that further progress in that direction is not likely to occur. However, women are yet dying the world over without any effort being made for their relief, or even the condition being recognized during life.

In view of the great interest taken in ectopic pregnancy these deaths should, for the most part, be avoided. Investigation will show that much of the literature is controversial in character. The disputed pathology and methods of treatment in ectopic pregnancy have already employed too much type to the detriment of sound diagnosis. While fine anatomic and pathologic distinctions are abstractly valuable in abdominal surgery, yet they do not always possess life-saving qualities. The minds of those who have studied carefully at the operating table and in the laboratory the intra-abdominal conditions found are often harassed by serious doubts. The demonstration of beautifully made, frozen sections do not always convey to every mind correct impressions. It is a sad commentary to have a man argue the probability of ovarian pregnancy with you while his patient is bleeding to death in the next room. He has lost the nucleus of the thing; it is the bleeding, not the possibilities, that demands action.

After all that has been said and written, I am inclined to the belief that, stripped of their controversial portions, the lectures of Mr. Lawson Tait, published in 1888, present about all there is concerning the matter. Mr. Tait was direct in his language; his pathology was simple; his operative technique was at once rational and successful. Further progress lies along the lines of simplicity in pathology, clearness in diagnosis, and definiteness in treatment. The general practitioner must be made to do this part, but first he must be taught the clinical history and diagnosis. Discussions of primary abdominal ectopic pregnancy, the living placenta, or electricity, are of no value when measured by diagnosis. It is upon these points that it is my purpose to dwell.

How much of fully demonstrated pathology is really useful in diagnosis and subsequent treatment of ectopic pregnancy? That all ectopic pregnancies are primarily tubal is demonstrable with so few exceptions that they need not be considered in the subsequent management of the condition. They remain tubal until rupture or abortion occurs. Tubal abortion, or the expulsion of the developing ovum from the fimbriated extremity of the tube into the abdomen may occur at any time between the second and eighth week of gestation. It is neither a complete discharge into the abdomen or incomplete, being arrested in the fimbriated extremity, and gives rise to the so-called tubo-ovarian, or tubo-abdominal pregnancies. Rupture at the site of primary attachmant is, however, the more common mode of tubal delivery, occurring at any time between the second and sixteenth week. Rupture is coincident with the period of greatest possible distention of the Fallopian tube. If the ovum develops in the uterine end of the tube and uterine tissue is involved in the walls of the gestation sac, the pregnancy is said to be interstitial; if in the middle portion, infundibular; if in the fimbriated extremity, ampullar. With rupture the ovum is, either wholly or partially, discharged into the broad ligament or the peritoneal cavity, and its life usually destroyed by the accompanying hemorrhage. Where the intraperitoneal delivery is incomplete or it occurs between the folds of the broad ligament, gestation sometimes continues until secondary rupture and renewed hemorrhage or term is reached. Hemorrhage into the membranes of the ovum may occur while it is yet within the Fallopian tube, and lead to fetal death and the development of a tubal mole. Bleeding more frequently destroys the fetus than the mother, in the first four months of gestation.

The contention that all ectopic pregnancies continuing until viability are developed between the folds of the broad ligament, is not borne out by conditions found on the operating table or in the laboratory. Repeated hemorrhage without secondary rupture of the gestation sac may destroy a broad ligament pregnancy at any period of gestation. Suppuration within the sac may lead to the discharge of the fetal bones and other detritus into adjacent cavities, or through the abdominal walls. Another termination is the formation of lithopedion and adipose. The child dies during or at the conclusion of spurious labor. The death of the placenta is not always coincident with that of the fetus. There are a number of cases illustrating this fact, one of which in my personal observation will be reported in connection with this paper.

The children who have been delivered living from ectopic gestation sacs, have many of them shown little post-natal vitality, fully half dying in the early days, and very few living beyond a year. Again, many of them show gross deformities, hemiplegia, spina bifida, cleft palate, hare-lip, contractions of the limbs and club-foot.

The uterus always undergoes sympathetic enlargement, and from its mucous membrane develops a decidua, corresponding very closely to that of early uterine pregnancy.

From a careful analysis of my own cases, and the experience of others, I believe that the foregoing pathologic statements are all that are fully demonstrated, and further, they are all that are needed for the proper understanding of the diagnosis and treatment of the condition.

DIAGNOSIS.

The importance of diagnosis can not be overestimated in ectopic gestation, yet its difficulties are at once serious, if not at times insurmountable. The history of ectopic gestation is largely that of operations undertaken after rupture and hemorrhage, or after viability. Those operations done before rupture were often a matter of accident, or the patients were in unusually favorable circumstances. That most cases of ectopic pregnancy are first seen by the general practitioner, will not be disputed. Here is the

point: The general practitioner is bound to possess a knowledge of the natural history and diagnosis of this disease that will keep in his mind the possibility in every woman, married or single, during her child-bearing period of this condition. Suspicion, with competent consultation, is the best substitute for precise diagnosis with which I am familiar. The profession at large have suspicions of appendicitis under proper conditions, and if under other circumstances their suspicions of ectopic pregnancy can be aroused and skilled assistance called, then will a considerable advance have been made. The reason is obvious. In appendicitis, a clear, unmistakable and unequivocal statement of facts have been so briefly and repeatedly made, that all are familiar with and governed by them. All the statements are not absolutely or entirely true. There are exceptions to many of them, but they are sufficiently general in their application to form a universal basis for opinion and action. What is wanted is a similar primer of ectopic pregnancy. On reflection, it will be seen that the difficulties attending such a plan are many. There are general considerations which apply to the condition. That all women suffering from ectopic pregnancy have previously suffered from some disorders of the organs of generation is a fallacy. In three of seven cases reported at the conclusion of this paper, there was no history of prior generative disorders. One with a baby, the youngest of five children; another with a good previous history a few months married, and still another the mother of three young children. The other cases present a variety of conditions, sterility, displacement and inflammatory disease.

In order to discuss the diagnosis intelligently, subdivisions must be made. Clinically the most natural ones are: 1. Before rupture or tubal abortion. 2. After rupture has occurred. 3. The fetus *a*, living and viable, or *b*, dead.

The difficulties of diagnosis before rupture or tubal abortion are very great, and its possibility will not be admitted by all. The greater number of cases are not seen by a physician until rupture or abortion occurs. A minority come to the operating table for inflammatory disease of the appendages. There is a lack of symptoms pointing to the condition. The patient either believes herself normally pregnant, or has no suspicion of it. Nausea and vomiting may be present, with amenorrhea and mammary changes. The metrorrhagia of ectopic pregnancy does not occur, in the majority of cases, until after rupture or symptoms of impending rupture present. The one particular point upon which diagnosis depends may be stated as follows: Any woman who during her child-bearing period presents symptoms of disease of the organs of generation, of recent origin, either new or entirely different from those heretofore experienced, if associated with any of the probable early symptoms of pregnancy, demands at once a careful examination. If this point can be made sufficiently clear, many more cases will be operated on before rupture occurs.

When rupture or tubal abortion occurs other symptoms arise which at once brings the physician to the bedside. There that general rule, "Pain in the abdomen calls for careful investigation," always applies. The clinical history is of exceeding value in making clear this point. The pain associated with rupture or abortion can only be mistaken for appendicitis, biliary or renal colic, acute intestinal obstruction, or uterine abortion. With a full clinical history and a careful physical examination, the diagnosis will be positive. Very few errors have been made and the abdomen opened to find another condition present. Few exploratory incisions are made in ectopic pregnancy.

Too great dependence can not be placed upon the expulsion from the uterus of decidual membranes. In a recently reported case where the diagnosis was chiefly based on that fact, no ectopic pregnancy was found at the operation. Membranous dysmenorrhea is associated with the expulsion of similar uterine casts. It is valuable rather than pathognomonic. Collapse is always an important symptom, and its source is to be carefully studied whether it arises from simple pain or pain associated with hemorrhage. It is not to be forgotten that many intra-abdominal conditions may give rise to collapse. Pain as a source of collapse is not always easily differentiated from bleeding or extravasation, with pain. In collapse from pain or fright, the administration of anodynes and the application of local heat is followed by reaction. The collapse from progressive bleeding is continuous, with little disposition to reaction.

After primary rupture, the fetus yet living, if the woman does not die or the fetus is not destroyed by the hemorrhage, gestation proceeds until the viability of the child becomes a contingency, or secondary rupture occurs. Very few of this minority ever reach term.

Defective clinical histories may make diagnosis very difficult. The bi-cornate uterus, uterine fibroids, may make the diagnosis difficult or impossible, and exploration of the cavity of the uterus unwarrantable. Under such conditions the patient ought to be under the most favorable auspices and in bed.

A sufficient number of cases of current intra- and extra-uterine pregnancy have occurred to keep its possibility in the mind of the surgeon. The pregnancies may date from entirely different periods. The most serious form of ectopic pregnancy is undoubtedly the interstitial. Unfortunately it gives rise to fewer direct symptoms than any other variety, yet when the rupture does occur the attack is explosive. The woman quickly bleeds to death within her abdomen. Four hours of inaction is quite sufficient.

TREATMENT.

What are the indications for treatment in ectopic pregnancy? The question may be conclusively answered by the phrase—a diagnosis. There are exceptions, but they are for the personal opinion of the experienced surgeon. What is the treatment? This also can be answered briefly in the interest of the patient—operative. Competent operators are so numerous and so successful in every part of this land that no excuse can be offered for non-surgical interference. When shall we operate? As soon as a diagnosis is made. Time forbids entering into the discussion of injections into the gestation sac to induce the death of the fetus, or the application of electricity in the treatment of ectopic pregnancy. These plans have been so repeatedly discussed and so universally condemned that nothing is to be gained by further consideration. If there be an advocate (there are a few yet living) of the use of electricity present, I can not hope to convince him, and admonition does no good.

It is quite superfluous to enter into the detail of operations to be undertaken at any period of ectopic

pregnancy, but certain subjects inevitably confront us: The position that vaginal celiotomy will assume in the treatment of ectopic pregnancy, the control of hemorrhage during operations undertaken at all periods, the time of operation, the child living and viable, the management of the placenta in operations undertaken after the sixth month, the management of cases where operations are to be undertaken for the removal of the dead fetus, either disintegrating or degenerating, the management of the general condition of the patient at the time of the operation.

The patient's general conditions and surroundings will influence the time and place of operation. Where rupture and progressive hemorrhage are not coincident, operation is to be undertaken deliberately under the best hygienic conditions. Progressive hemorrhage into the free peritoneum is emergency surgery, and operation must be done without delay. An operation can be well under way an hour after the diagnosis is made. In many cities there is an ambulance service. You call it from the nearest telephone and at the same time order the sterilizers lighted, and other preliminary preparations made. The patient is wrapped in blankets and is taken from the ambulance directly to the table. During early anesthesia the abdomen is prepared for incision. The direct or intermediate transfusion of normal salt solution is a valuable measure in collapse, far more than the hypodermatic administration of stimulants, and can be employed at any period by very simple apparatus. The experience of many operators has repeatedly shown the life-saving properties of saline transfusion.

The control of hemorrhage is the first indication in most operations undertaken in the early months of ectopic pregnancy. The first efforts of the surgeon are directed to that end, and with all the speed compatible with good surgery. First determine the side of the ruptured tube, and place a clamp on the broad ligament close to the uterus. When the pregnancy is interstitial, clamp both broad ligaments. These measures will control the bleeding at any period of gestation. The subsequent steps of the operation can be undertaken with greater deliberation. Usually they are simple enough, enucleation or suture of the gestation sac into the lower angle of the wound, the removal of the damaged appendage. In interstitial pregnancy, complete or supra-vaginal hysterectomy, or the resection of the horn of the uterus will be required. The choice of method will depend upon the experience of the surgeon and the condition of the patient. Hemorrhage during the later months of ectopic pregnancy from the site of living placenta, the fetus often dead and macerated, is most difficult in management.

Out of a large number of cases delivered at or about term the most serious difficulty experienced was in relation to the placenta. Two plans have been suggested: its removal with multiple ligature, and tying the cord close to the placenta, closing the abdomen in the hope that subsequent abortion will take place. Both methods have succeeded and failed. A third plan has suggested itself to me: first preliminary ligature of the ovarian and uterine artery on the side from which the placenta receives its blood supply, second the placing of Mickulicz tampon of sterile gauze over the placenta establishing pressure atrophy; third, preliminary suture of the abdominal walls, the sutures to be tied after the removal of the tampon and placenta. Such a tampon may be safely left for three days, and then removed with the placenta, and the sutures tied. I want to add that in two cases where the fetus had died, become macerated and disintegrated, that operations undertaken through the rectum were followed by fatal hemorrhage from a yet living placenta. Both of these cases should have been attacked by abdominal section.

The child living and viable, what shall be done? A considerable number of mothers have been already sacrificed while waiting for term to arrive. A surgeon recently described as a triumph in surgery, the saving of a child suffering from pressure hemiplegia and spina bifida. Another civilization of another and less human age conducted such to the unknown early in their careers. To-day the number of children a year old and undeformed, who had their origin in an ectopic gestation sac, can be counted on the fingers of one hand. The living child is subsidiary to the living mother.

Vaginal operations undertaken for the relief of ectopic pregnancy will always be limited, yet early cases may often be remedied by this method. Where suppuration in broad ligament pregnancies has occurred, there can be no doubt of the value of this method in many cases, an abscess, incision and drainage through the vagina.

There remains yet another topic in relation to the treatment of this condition, that of the opposite ovary. No question can arise where gross pathologic changes have already occurred. It is worthy of our attention that subsequent ectopic pregnancies have occurred in appendages left at operations. The other ovary and tube should be carefully examined and removed if any evidences of disease are found to warrant the procedure. The question is placed largely on the same basis as unilateral removal of the appendages for inflammatory conditions.

In conclusion, the histories of seven cases of ectopic pregnancy are given with the results of treatment, five recovered and two died. One death to be attributed to an improper operation advised by me, the other (case 1) to carelessness or want of knowledge upon the part of the gentlemen who were in attendance during the earlier period of gestation. I believe that the clinical histories given, together with the results of the physical examination, lead to an irresistible diagnosis of the condition.

Case 1.—Mary R., aged 38, married, native, was seen August 16, 1894. This patient was seen only a few hours before death. Between the second and third month of a supposed normal pregnancy, she had a severe attack of abdominal pain with fainting and uterine hemorrhage. The pain was confined principally to the left side of the abdomen. An abortion was supposed to have occurred at this time. She recovered from this illness after two weeks, and was able to attend to household duties. A month subsequently a second illness, supposed threatened abortion, occurred. There was at this time a sharp attack of peritonitis. Another physician in attendance discovered an abdominal tumor thought to be ovarian in character. She again improved and was able to be about. At the sixth month she "felt life" and was satisfied that she was pregnant. All uterine hemorrhage had ceased.

The onset of labor was delayed until about the three hundredth day of gestation. She was under the care of a midwife for two days, during which time labor pains were severe, but no progress was made toward delivery. Dr. Brierly was called, and he was soon able to determine that some serious abnormal condition was present. He called Dr. Andrew MacFarlane to his assistance, and they dilated the cervix, and determined that the uterus was empty. A diagnosis of extra-uterine pregnancy was now established. Dr. J. P. Boyd saw the case, and an hour later we met in consultation. An active general peritonitis was now present. Pulse could hardly be felt in the radial artery and was very rapid. Her general condition forbade operation. She died in a few hours.

She was the mother of five children, had had one abortion in 1892, was suffering from no uterine disease at the time of this pregnancy. Autopsy: The abdomen when opened discharged several pints of foul, blood stained, floculent serum. The normal anatomical relations of the viscera were greatly disarranged. The intestines were distended and their coats discolored. All the evidences of acute septic peritonitis were present. The gestation sac was opened and the child delivered. An effort was made to determine the source of the sac and its relations, as well as the attachments of the placenta. The intimate union of intestine, omentum and mesentery made this most difficult. The left broad ligament and uterus formed a part of the anterior wall. The posterior and superior walls were formed by adhesive, inflammatory material, intestine and omentum.

The placenta had its attachment in the pelvis, to the rectum and folds of small intestines. It could not have been removed during life without causing a fatal hemorrhage. The left ovary was not to be found, and undoubtedly formed a part of the wall of the gestation sac. The left Fallopian tube was traced with a probe some distance along the wall of the sac.

Case 2.—A. G., aged 27, married, native. April and May, 1892, she missed two menstrual periods and presented the usual early symptoms of pregnancy. At about the tenth week there was an attack of uterine hemorrhage, associated with abdominal pain. She did not improve. Breasts continued to enlarge and contained milk. Soon a diagnosis of tumor was made. The uterine hemorrhage continued and repeated attacks of abdominal pains occurred. Early in September a localized peritonitis was associated with partial intestinal obstruction, rigors and high fever. A few days later a discharge of purulent matter from the rectum was observed. Some small fetal bones were discovered in the discharge. Dr. Beach found a distinct opening into the rectum through which a portion of the fetus was removed. This was followed by considerable bleeding, although the utmost gentleness was employed. During the afternoon of the day I was called; without any interference, a second and fatal hemorrhage from the rectum occurred.

Autopsy, eighteen hours after death: The local conditions revealed a gestation sac made up of omentum, mesentery and uterus, cemented together by plastic lymph, containing a macerated fetus of about the fifth month, and a living placenta attached to the intestines and pelvic wall.

The attempts made to remove the fetus through the rectum had made a partial separation of the placenta, and it was from this source that the fatal hemorrhage came.

Case 3.—Mrs. Mary R., aged 28, married, native, was seen January 16, 1896. She was taken suddenly with "colic" early in the afternoon. At the time of my visit, the pain was so severe that repeated hypodermic injections of morphia were required. The pain was intermittent in character, or like labor pains, located chiefly in the left ovarian region. Her last menstruation occurred November 20–24, 1895, and was normal in character. About January 1 she suffered from nausea, and her breasts began to swell. She believed herself pregnant from her experiences in previous pregnancies. She suffered from a degree of uterine prolapse since her first child.

Physical examination showed an enlarged uterus, soft, with a patulous os. To the left of the uterus was a tense tumor the size of a small orange. Temperature normal, pulse one hundred and of good quality. I believed that I had an ectopic pregnancy with impending rupture. The next day uterine hemorrhage commenced and continued for two weeks. Shreds of decidual membrances were expelled. There was evidence of pelvic peritonitis for a few days. No indications for operation occurring, the patient was kept in bed. After four weeks there were no physical signs of disease in the pelvis, other than uterine prolapse.

I am of the opinion that tubal abortion occurred within the four hours between the onset of the symptoms and my second visit, and that the ovum was discharged into the peritoneum, died and was absorbed.

Case 4.—Caroline S., aged 42, married, native of Germany, entered the Albany Hospital, February 19, 1895. She suffered from metrorrhagia, which at times had amounted to severe flooding. This symptom was of six weeks duration. The beginning of the flooding was associated with severe pains in abdomen, and syncope. The pain has continued at intervals since. There was a mucous discharge from the rectum and partial obstruction of the bowels. Was unable to leave her bed without fainting. Last normal menstruation in December, 1894.

Her previous health had been good. First menstruation at 16, always regular; married at 26, mother of six children, the youngest 3 years old. All her labors were normal. Physical examination showed a distended abdomen, resonant on percussion, and quite tender, particularly in the lower portion. Investigation showed a tumor in the right lower abdomen, coming from the pelvis, rather larger than a child's head. It was tender, slightly movable, and gave no sign of fluctuation. Vaginal touch revealed an enlarged and softened cervix with uterine hypertrophy and lateral displacement; to the right, a tumor continuous with the horn of the uterus, and bi-manually it was found to be the lower segment of the one already mentioned. The uterus moved with the tumor. The finger introduced into the rectum discovered a band-like stricture, and almost complete obstruction by the tumor. There was no distinctive changes in the breast. She had suffered from morning nausea somewhat early in January, and had had at least three severe attacks of pain. There was no evidence that decidual membranes had been expelled from the uterus.

The history presented lead to the probable diagnosis, extra-uterine pregnancy, and the operation for its relief undertaken. The abdomen was opened and the relations of tumor explored. It occupied the folds of the right broad ligament. The ligament was incised and a large blood clot and the placenta removed. Both weighed four pounds. No fetus was found. Conditions showed that the hemorrhage had been intermittent. The borders of the incision were sewed in the lower end of the abdominal wound, and its cavity drained and tamponed after bleeding vessels were controlled by ligature. The subsequent history of the case was uneventful. She left the hospital well April 13, 1895, and is now in good health.

This woman had consulted many physicians before entering the hospital, and many diagnoses had been made—cancer, uterine-fibroid, uterine polypus, and miscarriage. Since, she has given birth to a fully developed child, after normal gestation. The labor was uncomplicated.

Case 5.—Frances G., aged 24, married, native of Italy, entered the Albany Hospital, May 2, 1895. Pain and discomfort in lower abdomen, irritable bladder, uterine hemorrhage, great prostration, and subsequently fever. The duration of this illness had been more than two months. She had not menstruated in January or February, 1895, had nausea and considered herself pregnant. About the middle of March she suffered from a severe attack of colicky pain in lower abdomen, associated with flooding. It was regarded by the physician called as a miscarriage. The patient growing no better, Dr. L. F. Neumann came in charge of the case in the early part of April, and at once became suspicious of the true condition.

Her first menstruation was at fourteen, and normal. Married at sixteen, mother of three children, the youngest two and one-half years old. Had suffered in the meantime from no menstrual or uterine disorders. Her general health had been good. There is no apparent heredity. Physical examination revealed a tumor in left lower abdomen, the size of a cocoanut. It was solid, tender and quite movable. The cervix was found enlarged and softened, the os patulous, the uterus displaced to the right as an appendage of the tumor. This history indicates that the patient had two attacks of hemorrhage before the operation.

May 3, 1895, the removal of the gestation sac from the left broad ligament was undertaken. The enucleation was tedious and associated with free bleeding. The right ovary and tube were removed on account of gross pathologic changes. Drainage was employed for three days after the operation. The subsequent history was uneventful and the patient returned home in three weeks, her wound soundly healed. An examination of the gestation sac revealed the point of rupture in the tube, a small portion of permeative placenta, but no parts of the fetus.

The health of the woman is now good.

Case 6.—Florence S., aged 26, native, married, entered the Albany Hospital, May 20, 1895. Pain and distension of abdomen, fever and chills, general weakness. The beginning of the illness was on April 26, 1895, when she had a severe attack of abdominal pain and immediately began to flood, although it was not the time for normal menstruation. She was confined to her bed much of the time until May 10, 1895, when she sat up. This slight exertion brought on a second attack of pain more severe than before, associated with symptoms of collapse. Abdominal distension and tenderness came on, associated with diarrhea and fever. May 18, 1895, Mrs. S. had a well-marked rigor followed by high temperature and partial intestinal obstruction. This was repeated on May 19, and her condition became serious. I saw her on this date and aspirated a swelling in left lower abdomen, with drawing five pints of very foul, blood-like fluid, mixed with gas. The abdomen was generally distended and very tender. By vaginal touch nothing could be made out; everything was matted together. There was a very foul discharge from the vagina.

Her previous health had been fair. First menstruation at

sixteen, normal until eighteen, when it became scanty, irregular and painful, married at twenty-two, one child living, two and a half years old. Mother died of puerperal fever. Father living. There is no history of tuberculosis or tumor in the family.

She was brought to the hospital May 20, 1895; an abdominal incision was made. Adhesions were universal. A large cavity, including the pelvis and left side of the abdomen, was filled with decomposing blood clot and pus. This cavity was washed as clean as possible, and filled with iodoform gauze. There were no distinct walls to the cavity. Agglutinated intestines, omentum and mesentery enclosed it for the most part. She was taken from the table in severe shock. However, she rallied and after forty-eight hours the gauze tampon was removed from the pelvis, a large glass drain introduced, and the abdominal sutures tied for the first time. An enema was ordered shortly after and it came immediately out of the glass drainage tube. For two weeks all the bowel motions were through the drainage tube. Careful attention to the fecal fistula, repeated irrigations daily, enabled us to avoid any general infection. June 2, only a small fistula remained and the patient returned home. The bowels now acted naturally.

Late in September she returned to the hospital for relief of the fistula, but after exploration and curettement it closed with little trouble. She is well and strong.

Case 7.—Mrs. Anna DeR., aged 34, married, native, was seen July 10, 1895. She had been in bed for some time suffering from abdominal distension and pain, fever, rigors and sweating. Menstruated March 24, 1895, for the last time. In the latter part of May she was suddenly attacked with severe abdominal pain, and noticed a small tumor in the left groin. This disappeared in a few hours, but the distress continued. A week later a similar attack was experienced, after which nausea was experienced and continued. Her family physician at this time discovered a hernia which was treated by a truss. The abdominal pain continned. On June 29, an attack of vomiting, great pain and fainting occurred. She went to bed and remained there until removed to the Albany Hospital June 30, 1895. Three weeks before entering hospital flowing began and a membrane was expelled from the uterus, supposed to be a "false conception." Just prior to entering the hospital she had a chill lasting for twenty minutes. Physical examination showed the usual signs of ectopic gestation with rupture. On July 20, she was removed to the hospital for operation the following day. During the night an attack of hemorrhage occurred and her condition became serious. The operation was made early the next morning. Blood clots and fresh blood flowed from the incision, which was at once arrested by a clamp placed on the left broad ligament. The blood, fetus and placenta were at once turned out of the abdomen. The broad ligament was immediately tied and the remnant of the left appendage removed. After the peritoneum was cleared the abdomen was filled with normal salt solution, and closed with drainage—a glass tube. The subsequent history is uneventful. The woman is now in good health.

SYMPTOMS, DIAGNOSIS AND TIME FOR OPERATION IN RUPTURED TUBAL PREGNANCY.

Read in the Section on Obstetrics and Diseases of Women, at the Forty-seventh Annual Meeting of the American Medical Association, at Atlanta, Ga., May 5-8, 1896.

BY JOSEPH PRICE, M.D.

PHILADELPHIA, PA.

Careful study of the physiologic, anatomic and pathologic conditions of cases coming within our experience, while such study has not altogether removed from controversy very many subjects connected with gynecology, it has led some of us to positive convictions and to the adoption of well defined lines of practice. We are concerning ourselves less about theories, though we are not able to dispense with them altogether, but we are growing to base our rules of practice more upon the results of our observations and experiences. Pathologic systems are continually changing, one system succeeding another in quick and confusing succession. There should be no element of mere conjecture in our every day working experience. After the surgeon has discovered and relieved conditions which his experience, his observation, has taught him to detect with almost mathematical certainty, the pathologist can step in and display his science in explaining cause and effect.

The occurrence of tubal pregnancy is regarded in widely different light by the theorist and the surgeon who has learned to deal with it practically, and who has accordingly come to understand the manifold directions in which speedy disaster may troop down upon unfortunate women subjected to this calamity. The argument that many cases get well of themselves, in the presence of the multitude of disasters possible, and in the light of the horror of some of these very recoveries, is so puerile that the surgeon of practical and positive bent can not regard them with complacency, nor consider that those who advance them have any authority from which to speak more positive than the vaporings of fancy. As to the causes of aberrant gestation, we are to consider them both as anatomic and moral. They may have their origin in anatomic loss of structure or in perversion of function, such as absent ciliary motion in the epithelium, or in absolute disease of the tube, or, as I have had more than once called to my attention, in the fright of illegitimate conception. Causation can rarely be determined with certainty; there are many agencies which operate to produce the trouble. The character of the attack, the whereabouts of the patient, at what employed, are always interesting considerations. The attacks are exceedingly sudden. A vigorous woman may in a few minutes look pale and exhausted and have a very feeble pulse. Any effort to change position increases the pain and she will start with a scream; the pain may be quite general and not confined wholly to the abdomen. The rational symptoms of pregnancy are not very marked. Morning sickness is never very prominent. For weeks they may complain "on and off" of sharp pain in one groin or the other. These pains are followed by bloody discharge; the odor of the discharge is also characteristic. Later the sharp and severe pain is followed by faintness and increased flow mixed with shreds and débris. Ruptures with large effusions are easily recognized upon examination. The finger detects an ill-defined boggy tumor, the uterus enlarged and posterior or pushed well to one or the other side. If the rupture is quite recent it may be difficult to determine a tumor of any character; there is simply a feeling of general resistance. In examinations made one or two days after rupture it is easy to define the irregular boggy tumor, also to locate the uterus, determine its size, position and mobility.

There is very frequently associated with these cases a history of sterility, inaptitude to conception and mild forms of pelvic disease, abortion or doubtful abortion antedating the pregnancy some four or five years, absence of one or more periods. Very frequently there is peculiar nervous disturbance, morbid apprehensions, irritability followed by acute pain, severe and recurring, pain of a variety rarely associated with other troubles. Usually the pain is followed by anemia or symptoms of concealed hemorrhage; the common symptoms of loss of blood are prominent. It is then other symptoms develop, intra-pelvic or perineal tumor due to clot or pressure, there is characteristic vesical and rectal disturbance, peculiar central fullness of the abdominal walls. Slight distension, tympany and marked tenderness rapidly follow the first rupture, recurring hemorrhage and all symptoms become more marked. The restlessness of the patient is alarming; probably 25 per cent. die in twenty

hours, where there has not been prompt and skillful surgical relief. Hemorrhage is the real cause of death; they die both early and late in the history of the trouble; early, from rupture of tube, late or at term in primary sections done for saving both mother and a viable fetus. The non-contractile tissue of the tube favors free and continuous hemorrhage. Ruptures on the outer half of the tube or about the pavilion extremity are the least fatal. As the rupture nears the uterus the hemorrhage is most fatal. These points have been demonstrated in the experience of every one who has done any considerable number of sections. So marked has been my own observation of these facts that I commonly allude to it in my cases, exhibiting it as an object lesson to those witnessing the section, and these facts have led me to classify the cases; first, ruptures in the outer half of the tube belong to the surgeon; the second or inner half go to the coroner or coroner's physician. Rarely can you improve volume, quality and frequency of the pulse in such cases where all the symptoms are as I have narrated.

It is my conviction, fortified by my own experience, counting now one hundred and twenty-eight cases with five deaths, that the operative treatment is the only one to be considered. I am fully satisfied also that these pregnancies are rarely, if ever, in the broad ligament. In the case of fetus gone to term, in my own direct and indirect experience, the child has in no instance been in the broad ligament. I regard the chief danger of the operation as that of hemorrhage. If the patient is found so weak as to render operation an almost certain failure, I resort to salt water transfusion in order to restore the arterial tension.

Rupture with fatal hemorrhage is the most frequent termination; pyemia, septicemia and peritonitis are much rarer.

Relating to such cases Goupil says: "It is but true, I fear, that we are authorized in saying that all the cases of intra-peritoneal hemorrhage arising from extra-uterine pregnancy end in death, and although death has been delayed for six months, it is wholly exceptional. This was absolutely true in my own experience until I was emboldened—I say it—until I was shamed by Mr. Hall Wright's case into opening the abdomen and saving their lives."

The consensus of opinion by those who are competent to speak from results must be for early operation. But there are, in addition, those cases to be considered in which, after primary rupture, the fetus has still lived and advanced to full term. Here the question is one of operation with the view of saving both the life of the mother and that of the child. If one is to be lost, it is my belief that it should be that of the child; that the life of the mother is of paramount consideration. The chief danger to the mother in the operation at term in tubal pregnancy is the removal or accidental detachment of the placenta. It is easy enough to remove the child and save it, if it is viable, by operating at or near term; but the danger of fatal hemorrhage from vascular walls that can not contract, as do the uterine structures, is the vital question of the operation, so far as the mother is concerned. If we do not remove the placenta the risk of septic infection still remains.

The old and non-surgical rule of leaving the placenta to slough away is too dangerous and prolonged to be practiced. The placenta should be removed in every case, or washed and hermetically sealed, thus favoring its healthy digestion and avoiding gangrenous separation and detachment. Secondary rupture of broad ligament, discharge of placenta and fresh adhesions, or the second implantation or grafting of the placenta, have never occurred in my experience, nor have I any knowledge of such cases except that conveyed through the literature on the subject. Basing the conclusions of my judgment upon my own clinical experience, I must hold to the tubal origin and the intra-peritoneal rupture. All that follows tubal rupture is within the pelvis and peritoneal cavity, and not within the leaflets of the peritoneum forming the broad ligament.

It must be admitted that the removal of a growing and almost universally attached placenta is one of the most difficult procedures in surgery. The hemorrhage is profuse and sometimes uncontrollable; the contraction of all tissues to which it is attached simulates that of uterine tissue. Rapid separation, heat and firm pressure will commonly succeed in controlling it. As to choice of time for the operation, I am of the strong conviction that there is but one choice, and that is prompt removal when the accident is first recognized.

It is better to act promptly. The steps of procedure are clear and should be completed at any risk. It is better to contend primarily with the loss of blood than later with overwhelming sepsis. Tubal pregnancy is dangerous throughout its existence; the subject *is never safe until surgically relieved. Exceptionally*, is the trouble recognized before rupture. I have never recognized one before rupture, all before is conjecture rather than knowledge.

An important element of the history connected with these cases is that few of them are kept under observation with the definite purpose of removing the viable child at the period of spurious labor; alarming symptoms develop and subside, and consultation with a specialist, if they are at any time consulted, follows the death of the child, it rarely antedates it. Then all the conditions are found greatly aggravated by delay or neglect, or that which is infinitely worse than either or both, inexcusable ignorance. Consultations for suspected extra-uterine pregnancy are quite common in those peculiar cases of much-attenuated uterine walls in normal gestation, but the ectopic cases are permitted to pass through the primary rupture, recurring ruptures, almost constant pain and spurious labor, entailing impaired general health, without suspicion of the patient's peril.

An English authority has stated what, in connection with these cases, should be accepted as sound dictum: "As all know, the Fallopian tube is, in the vast majority of instances, the starting-point of extra-uterine gestation; the most common result of this is that rupture occurs usually at the second month, through some part of the tube covered with peritoneum; a result almost universally fatal if left alone, and as *invariably curable if operated on in time* by abdominal section."

DISCUSSION ON PAPERS OF DRS. MACDONALD AND PRICE.

DR. JOSEPH EASTMAN, Indianapolis—So far as I am able to judge from reading the literature of this subject and from experience, there is but one treatment for extrauterine pregnancy, and that is surgery. I will refer to one case which came under my observation because it was an extraordinary one, and it illustrates still further the futility of packing with ice and the use of electricity. A man supposed to be a competent electrician and well posted in the treatment of extrauterine

pregnancy by electricity tried for six months to kill the fetus and failed. He then tried packing with ice for three weeks more. When the patient was *in extremis* there was a change of physicians. On opening the abdomen, I found the sac containing a living child in such an advanced gangrenous condition that I could not for a moment think of leaving it. Following the rule which I always insist on, that we shall first find the uterus, if possible, I slipped my hand down, found the origin of the tube toward the uterus, believing that all cases of extrauterine pregnancy are primarily tubal, seized the tube at the cornu of the uterus, which felt fully as large as my wrist, and in doing so I detached a portion of the placenta from the gangrenous sac. Blood poured out freely; my assistant had gone to resuscitate the child, leaving me with a couple of nurses to do the best I could under the circumstances. Crushing down the sac (as you would crush a cherry-stone out by squeezing the cherry) with clamped forceps which I have with fingers like my own, I seized the sac below, then to my own astonishment I found the sac was adherent in a number of places to the intestines. With this clamp attached, after applying six ligatures around the points of hemorrhage, we got the gangrenous sac out, then quilting with iodized silk, we had the pedicle, to the cornu of the uterus, covered with iodoform collodion. Where we find a dead or living child with a gangrenous sac, the proper way to deal with such cases is to get at the cornu of the uterus either with clamps or ligature, shut off the blood supply, and remove the sac. I do not believe that it is good practice to leave the placenta to slough out. I do not believe there is a case where such men as Dr. Price would be induced to leave a gangrenous sac. I believe the sac can be removed in many cases with less risk to the patient than in leaving it or the placenta to slough out, or both combined.

DR. C. A. L. REED, Cincinnati—My experience has led me to attach particular importance to the symptom of shreddy metrorrhagia as an early manifestation of this condition, and I have not been able to verify the fact that this symptom occurs only after the symptoms of rupture. On the contrary, I have found that it has occurred among the earliest manifestations of pregnancy, and no doubt it has occurred when there were no symptoms of pregnancy, and I was prompted on one occasion to make a careful study of a case and a diagnosis before rupture by following the case as suggested by the symptom, and that was one case in my experience in which a diagnosis was made before rupture, was operated upon before rupture had taken place, and the diagnosis subsequently verified by careful microscopic examination of the specimen removed. Therefore we did have in this one instance a confirmation of the fact that a shreddy metrorrhagia may occur prior to the symptoms of rupture.

It has fallen to my experience to observe so few instances, that I hesitate to allude to them, for the reason that their example has led to many errors and many fatal delays; but I have seen a number of cases in which primary rupture had occurred in the broad ligaments, for the reason that there was a definite extension of the tumor downward, and no particular extension of it upward, although its upper margins were definitely outlined. The tumor became stationary and disappeared. This was manifestly a hematocele. You may say that I had no evidence that it was a case of ectopic pregnancy, but if we are justified in saying that given cases upon which we operate were cases of ectopic pregnancy by virtue of the existence and persistence of certain sypmtoms which lead to the diagnosis, and which diagnosis is confirmed by operation, certainly we are justified in interpreting as having similar consequences a similar aggravation of symptoms, and these symptoms did exist in the few cases that I saw. While that is true, I believe it is a dangerous expedient to rely upon absorption. The maximum of safety is upon the side of operation at the earliest practicable moment, and if we have such primary rupture with such limitation of hemorrhage, the safest expedient is to avail ourselves of the quiescent interval and proceed to operate when we can do it without serious complication, and without being forced to deal with an exsanguinated patient.

DR. JAMES F. BALDWIN, Columbus, Ohio—There was one point made by the first essayist which is of prime importance, and that is with reference to educating the general practitioner to suspect the existence of ectopic pregnancy, and thus lead to a thorough examination and to a diagnosis. It has been my fortune within the last few months to have seen seven cases of ectopic pregnancy. Two of these were seen in my own practice, the others in consultation. In five of them the diagnosis was made before rupture and operation performed. The diagnosis was subsequently confirmed, and the five patients are well to-day. Two of these cases occurred in the same patient at an interval of six months. In each I made a presumptive diagnosis of ectopic pregnancy and operated. In two other cases no suspicion had occurred to the attending physician of ectopic pregnancy until I suggested to him that in the five cases mentioned the diagnosis had been made by the general practitioner. This case was one of ectopic pregnancy, the diagnosis confirmed, and the woman operated upon. In two cases the diagnosis was not made until repeated hemorrhages had occurred. The eighth case was one that was sent to the hospital during my absence, and the physician who sent the patient had made a diagnosis of peritonitis. The patient died within forty-eight hours after admission to the hospital from peritonitis. A post-mortem was made which revealed a normal uterus and tubes, but an ectopic gestation sac in the cul-de-sac of Douglas which had ruptured, producing a considerable amount of hemorrhage which resulted in peritonitis. This is an exceedingly rare condition, one which is denied by many pathologists.

We have educated the general practitioner to make a diagnosis in a large number of cases of appendicitis, and I think if we impress them in the matter of ectopic pregnancy until they suspect its existence when they have anything abnormal during the early weeks of pregnancy, they will make a diagnosis then or will have a suspicion sufficiently well grounded to send for an expert to make a thorough examination. When the general practitioner is educated up to this point cases of ectopic pregnancy will be diagnosed much earlier than they are now, and before rupture, and then the operation will be comparatively simple and few deaths will occur.

DR. A. VANDER VEER, Albany—Papers of this kind are lessons in object teaching. They teach the general practitioner regarding the matter of an early diagnosis in these cases.

With reference to general peritonitis, inflammation of the bowel, etc., I have lived long enough to hear papers on idiopathic peritonitis, and in abdominal surgery the comparison or difference between these terms and appendicitis have been and are presented in their true light. The general practitioner has been taught that pelvic hematocele will be absorbed, that it will disappear. Does it disappear? Look at the cases of pelvic abscess—cases where a portion of bone protrudes through the vagina and rectum. Look at the cases of secondary hemorrhage and death which occur before you are fairly in the house. Some of these cases if diagnosed early and operated upon immediately would be saved. So many papers have been presented in the past that they have mystified the general practitioner as to the classification of this condition, as to the true pathologic state present. What is the use of standing before the general practitioner and arguing with him as to the form of ectopic gestation. If you keep it up for twenty minutes your patient is beyond relief. When the clinical symptoms are presented the general practitioner must know that an operation is absolutely necessary, and we have the authority of one man who has perhaps operated more than any other in America in these cases, and he tells us emphatically what ought to be done.

Stress should be laid upon the sympathetic symptoms. The general practitioner should be educated in this matter as much

as he is in regard to cases of appendicitis, and in case he does not wish to operate himself he should call in a specialist to share the responsibility with him. I find that when we teach the general practitioner what to do he is not slow in following our advice.

Dr. F. J. Yager, Campbellsburg, Ky.—I am a general practitioner, but I am firmly convinced that in these cases of ectopic pregnancy as soon as a diagnosis is made we should operate. If the general practitioner feels that he is not sufficiently expert to undertake the operation himself he should call in a specialist. The more we study these cases the more we are convinced that delay is dangerous.

Dr. Rufus B. Hall, Cincinnati—My experience leads me to believe that a large percentage of these cases have a history of some pelvic trouble. I have known pelvic trouble to precede tubal pregnancy for at least five years in some cases. The cases are few in number in which we do not get a history of long continued pelvic trouble. We have a shorter space of time in which the patient has considered herself not entirely well since her last labor. A number of cases do not have these symptoms, but when we take the large number of cases operated on, a large per cent. of them have pelvic symptoms following some uterine or appendiceal trouble preceding their ectopic pregnancy. I have seen two women die inside of ten hours from ruptured pregnancy, before the third month of tubal gestation, as subsequently proven by autopsy. One patient lived twelve minutes after I reached the house. The time to operate is as soon as the diagnosis is made. In making a diagnosis we should not disregard the possibility of tubal pregnancy occurring in an unmarried woman, I have had two cases, one in a widow, who denied the possibility of pregnancy until after operation.

Dr. J. G. Carpenter, Stanford, Ky.—The model practitioner is a diagnostician the world over. If the general practitioner knows his business he makes a diagnosis and brings his patient to the abdominal surgeon if he does not want to operate himself. If he is the practitioner that he ought to be, he should be prepared to operate on the patient himself, because the best abdominal surgeons are made from the best general practitioners. Early diagnosis is the thing of prime importance, followed by prompt surgical interference. Operate before the patient bleeds to death from hemorrhage, before secondary lesions are set up. The patient is often unaware that she has had long standing uterine trouble. As soon as the diagnosis is made the patient should be promptly operated upon. If this was done a large number of cases that are now lost would be saved.

Dr. Milo B. Ward, Topeka, Kan.—We all agree that it is absolutely essential to resort to early operative interference in cases of ectopic pregnancy, particularly before rupture has taken place, if possible. The general practitioner must be educated to the point that in cases of ectopic pregnancy it is necessary to operate as soon as a diagnosis is made. Operative interference must not be postponed. I would like to report two cases which illustrate the danger of postponing surgical interference, but I will not do so at this time.

Dr. W. G. Macdonald, Albany—Regarding the general practitioner, I will say that in those cases which I have seen the matter of diagnosis or suspicion of ectopic pregnancy by him has been the exception, and not the rule. We must educate the general practitioner that we have in these cases certain definite symptoms.

When we are called in consultation we sometimes give diametrically opposite advice in regard to what is best to be done after the diagnosis has been made, and this puts the general practitioner in trouble. We want to act together in these matters and establish uniformity of opinion.

Dr. Joseph Price, Philadelphia—The subject is not so difficult to understand, and a study of differential diagnosis is rather easy. From a general standpoint, the general practitioner is a very much better diagnostician than the specialist. You are in the habit of calling in specialists to do your special work; sometimes after studying your cases two or three days you come to a positive diagnosis by exclusion, and now I am going to rebuke you for permitting the specialist to take the attitude which he commonly does. After studying your case you summon a specialist, he examines your patient, shrugs his shoulders, looks wise, and says he will tell you what the condition is when he opens the abdomen. The general practitioner is as good a diagnostician in a great many cases as a specialist, and when his attention is once called to a subject he recognizes and realizes its importance. I have the greatest respect for the general practitioner, and in ninety-nine times out of one hundred I have found him usually right. If we save these patients, there is no time for the specialist to be called in, because the operation must be done before the specialist arrives. I have said that at least 25 per cent. of the cases die within twenty-four hours. The symptoms are simple, physical characteristics are prominent. There is an absence of one or two menstrual periods, a delayed menstrual period, and along with this we have the characteristic agonizing pain. The attack of pain differs from any pain to which your attention has ever been called. We have the characteristic shreddy *débris* which is nearly always present; a rapid pulse, and the symptoms of concealed hemorrhage. In some cases the pulse may not be bad, and the symptoms are not alarming; but if the case is an acute and typical one, cut down upon the peritoneum only, and it will be found to be black. You have only gone to the peritoneum to make a diagnosis. You will find black blood beneath it in a large number of cases.

With reference to general practitioners making a diagnosis in these cases, I will say that nurses occasionally after listening to discussions in the operating room and taking a record of the case, will make a correct diagnosis. I have had nurses who have sat by the bedside of patients for some time tell me that the case looks like one of extrauterine pregnancy.

GAUZE AS DRAINAGE IN ABDOMINAL AND PELVIC SURGERY.

Read in the Section on Obstetrics and Diseases of Women at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

BY MILO B. WARD, M.D.

TOEPKA, KANS.

Human life so frequently depends upon the tying of a ligature, the use of one more suture, the perfection of an operation in every minute detail, that the subject of peritoneal drainage, which is, perhaps, the most vital of all questions connected with the always grave procedure of opening the peritoneum, should never become too trite to demand careful consideration, even though much has already been written on this subject, and every phase of the question thoroughly discussed.

Viewing my failures retrospectively, I am forced to the confession that no one feature of my work has given so much cause for regret as that of insufficient drainage.

It is idle to say that drainage is needed only when the work has been carelessly done. However perfect the technique may be, it is still a fact known to every operator, that there are cases whose recovery depends entirely on the drainage employed after the surgical toilet is made. The only question for consideration then is: What kind of drainage shall be used in a given case? It is so frequently necessary in choosing the material for drainage to provide means of controlling hemorrhage, thus filling two important func-

tions at the same time, that the problem is at once solved whenever we have suitable method to meet the dual requirements. The kind of drainage so often depends upon the customs of individual operators that it is impossible to lay down any rule to govern all alike. This statement holds good in the use or non-use of drainage, for some operators use drainage in almost every case and others seldom if ever use it. Another important fact to be borne in mind in considering a question of this magnitude is, no one kind of drainage can be expected to meet the indications in every individual case. The object of this brief paper is merely to urge the importance of the thorough use of gauze, in a large variety of complications, as the material meeting the most indications and tending to save lives that would, I think, be sacrificed if other methods of drainage should be employed. My experience in the use of gauze has been so pleasing, in a large number of cases presenting the gravest complications, that I can not refrain from recommending with great emphasis this important feature in abdominal and pelvic work.

It is not my intention to deprecate in the least the usefulness of other forms of drainage; neither would I be understood as urging the use of gauze drainage to the extent of making a hobby of this practice, because there are a number of reasons why gauze should not be employed unless its use is absolutely demanded. The most potent objection to this kind of drainage is the large opening necessary through which to remove the drainage material after it has performed its proper function. Another objection to its use is the pain caused by removing the gauze, and in some cases necessitating the use of an anesthetic. These objections, however, apply only to cases where the gauze has been introduced through the abdominal parietes, because the removal of gauze from the vaginal opening does not usually cause suffering. Frequently it is necessary to employ lavage subsequent to the operation, where the field is primarily septic. In this class of cases the gauze drainage will be found the most useful, because it leaves sufficient opening to convey the fluids to the septic area.

Much has been recently said relative to the poisonous tendency of iodoform gauze when used as drainage, but I have never experienced the least untoward symptom, even when used in large quantities. Perhaps there is a difference in the kind of gauze used. My method has been to use the Johnson & Johnson moist gauze, as it is furnished in glass jars. However if there is the least question of absorbing enough of the iodoform to poison the patient, this gauze may be used in the form of a sac to come in contact with the peritoneum, and the carbolated or borated used for the filling.

It would be quite improper for me to suggest to this learned body anything regarding the minute technique of the use of gauze, and, therefore, I have only to suggest that it be used freely, and that the entire surface made raw by the separation of adhesions be covered with the gauze. In operations in the peritoneum through the vaginal route, it is very essential that a free opening should be made, thus enabling a generous amount of gauze to be used without packing it too tightly. It has been suggested by a number of operators that the gauze should be cut in long strips, so that the distal end will reach below the plane occupied by the proximal end, but I have not found this plan at all essential in order to ensure perfect drainage. Gauze applied externally, coming in contact with that which is introduced into the abdomen, carries on the drainage quite as well, and does not require so large an amount of material.

The most natural interrogation is: What character of cases demand gauze as drainage? My answer is, almost all seriously complicated conditions of the pelvic and abdominal peritoneum, especially when the intestines are involved, and also in all cases where the peritoneum is opened through the vagina. There are no objections to the use of rubber or glass tubes in connection therewith, but I have never found it necessary to employ anything but the gauze. Where this kind of drainage is used for the purpose of controlling oozing, the result of separating adhesions, it is my custom to introduce silkworm gut sutures, and remove the gauze in twenty or twenty-four hours, and then tie the sutures, thus securing primary union of the incision. This plan may be carried out in nearly all cases of sepsis by tying a part of the sutures and introducing a smaller piece of gauze for continuous drainage.

In conclusion, I beg to state that it is my conviction and experience that many patients will undergo surgical operations and recover, when gauze is freely used for drainage, who could not survive with the use of any other material to perform this important function.

DISCUSSION.

DR. HOWARD A. KELLY, Baltimore—I no longer drain for tubercular peritonitis, and these cases practically all get well. The cases I drain stay in the hospital on an average of fifty-nine days, while those in which I do not drain remain on an average only thirty-nine days. The cases where I drained had fistulous tracts. When I drain I use gauze, for the reason that a glass drainage tube may do harm by introducing septic material, by its perforating the intestine, producing a fecal fistula. In the second place, it does not drain. I find pockets of fluid within half an inch of the tube walled off by intestinal adhesions. I advocate gauze drainage because it covers a large area. Any quantity can be used, and it can be employed in curved and angular spaces, and a constant capillary action is kept up. The disadvantages of the gauze drain are that the drainage is apt to stop after a while unless watched, and there is the further disadvantage in removing it because of the pain it causes to the patient. It is my plan to remove the gauze very soon if it has been used for hemorrhage; but if for sepsis, to leave it in for five or six days.

DR. CHARLES P. NOBLE, Philadelphia—The more I operate the less I drain. In the beginning I drained a larger percentage of cases than Dr. Kelly, but the longer he operates the less he drains. Of the first hundred cases upon which I operated about ninety were drained. I did not feel comfortable about my early cases unless a tube was inserted. If my patients recovered where drainage tubes had been used I felt happy. If they got well without drainage, I felt it was a fortunate accident. Further experience taught me that it was not necessary, and at present I drain but little. My experience is that gauze drainage does not drain. The serum collects in the gauze, and if you do not get it out in any other way it stays in and poisons the patient. I insert a glass drainage tube in the middle of the gauze to get the fluid out. I am quite sure after the first day that gauze does not drain by capillary action, it simply becomes impregnated with the fluid which is in the pelvis and retains it. If the case is actively septic, unless the infected gauze is removed the patient dies. In my opinion the chief function of the gauze is to pack off the infected area. I have never found it necessary to use drainage for hemorrhage, and I think that with the patient in the Trendelenburg position it can always be controlled. In a case in which it is necessary

to employ drainage for this purpose I would prefer a glass tube for twenty-four hours.

Dr. Rufus B. Hall, Cincinnati—Where I use gauze to pack off raw surfaces in the pelvis, I also insert a glass drainage tube to remove the accumulated fluid. I do not use gauze for drainage as frequently as some operators. I think gauze is indicated in pus cases where we have large denuded surfaces, because it keeps the intestines from becoming soiled, or where they will become adherent. I have employed it in many instances only to keep the intestines away from the soiled area until it was walled off. As to the best time for removal, if you remove it sooner than the fourth day the patient complains of pain. After the fifth day it hurts but very little. The lymph is not reabsorbed before the fourth day. I never think of using gauze for drainage alone, as I am so confident that it will not drain pus and blood clots. I would not use it without a glass drainage tube alongside of it, or in the meshes of the gauze where it would take up extra fluid.

Dr. Henry O. Marcy, Boston—It is unnecessary for me to rehearse the long battle some of us have had in reference to drainage. For many years I stood alone on this question and I am glad to see others coming to my views. I have laid down two rules for my own guidance. If the case is aseptic, no drainage; if septic, drainage. The reason I think gauze sometimes ceases to drain is because the operator tries to drain uphill. The proper place to drain is not through the abdominal wound, but through the vagina, and a large opening should be employed.

An objection to the application of gauze through the abdominal wound has not been referred to. The gauze will adhere to lymph if it is not disturbed. Even if it is loosened you are liable to displace organs, as lifting a considerable piece of gauze out through the abdominal opening is quite sure to dislocate the restored omentum, and if you are not very careful you have complications in consequence that are serious. Therefore, when we drain, let us drain properly, by which I mean drain by the vagina in such a way that you may profit by gravity. Let your opening be sufficiently large for drainage purposes. He who makes a small opening through the vagina and packs it tightly with gauze will certainly fail. If he makes an opening not larger than my little finger and wedges it tightly with gauze he has practically made a plug of it and has precluded the possibility of capillary drainage.

Dr. George M. Sternberg, Washington, D. C.—In regard to the general question of destruction of bacteria in wounds, the views of surgeons have been modified. Lister commenced years ago with the idea of killing the germs in the air, and then various propositions were advanced by hygienists to destroy bacteria in the water closet, and the discharges of normal individuals were to be disinfected. Now we have precise information as to what agents will destroy bacteria and in what proportion, and this precise data has been utilized by surgeons who are now very well informed upon this matter. They know that the particular micro-organisms which they have to fear are the staphylococcus aureus and the streptococcus pyogenes, and they know that the ordinary saprophytic bacteria which may drop upon the surface of a wound are not likely to do any great harm. Fortunately nature will provide for a certain number of bacteria, and even the most virulent varieties of the pus cocci are destroyed by nature. When you have a virulent streptococcus, such as you may get from the abdominal cavity of a woman who has died of puerperal fever, why then you must beware. The attenuated varieties, such as are found not infrequently upon the surface of the mucous membrane in the vagina of healthy women, must be kept out of wounds. You must take every precaution to do this, but nature will render harmless a limited number. Infection depends upon two or three things. 1, a virulent micro-organism; 2, a susceptible individual. All individuals are probably susceptible to wound infection, but there is a difference in the susceptibility. Any woman who has lost considerable blood may be more susceptible to infection than another. Experiments have shown that alcoholics are especially susceptible and those who have been suffering from inflammation have a predisposition to infection. A streptococcus of slight virulence might produce infection, and one may have a streptococcus with increased virulence which would be extremely dangerous for a person in poor health. You are familiar with the various chemical agents used to destroy these microörganisms.

Dr. Wiggin, Connecticut—I think drainage in ordinary abdominal troubles is a mistake. It is true we have a moderate amount of infection, but in breaking up adhesions it has been my practice to shut off the general cavity before the adhesions are ruptured and to use peroxid of hydrogen in fifteen volume solution strength, and after allowing a little time to elapse, washing out the cavity with a normal saline solution and closing the wound. By following this method I have no cause of regret. I have no septic peritonitis.

Dr. H. O. Pantzer, Indianapolis—I performed my first laparotomy in 1888, in which I resorted to the use of a drainage tube. I have not used it since and I have no reason to regret it. It is a clinical fact that the peritoneum is a tissue quite different from the tissues that we meet with it in wounds in other parts of the body, and it acts differently from those cavities which contain pus. The peritoneum is able to take charge of a certain amount of infection. Gauze packing is quite unnecessary, and pernicious when used to a great extent. It might be necessary in some cases to use a single layer of it, at most a double layer applied to the infected area. In most aseptic cases I use only a little bit of iodoform gauze and I have no reaction in most of my septic cases. I think iodoform gauze has a danger which has not been touched upon, namely, that of producing fistula. I know of one surgeon who has had at least one hundred cases of intestinal fistula which followed packing by gauze. I infer that the fistulæ were established here because of the violence with which the gauze packing was removed. There is an incentive to remove the gauze rapidly and violently because of the pain it produces. I would suggest the use of peroxid of hydrogen to loosen the gauze from its attachments. It acts admirably.

Dr. A. P. Clarke, Cambridge, Mass.—Dr. Sternberg brought out one point that ought to be emphasized. It was recognized some years ago before antiseptic surgery came into use. Many years ago I recognized the fact that in cases where there was great loss of blood there was a tendency on part of the absorbents to rapidly absorb everything, and that in such cases where there was absorption of pus we could predict that pyemia would follow. Even in these days in cases with little loss of blood and good health drainage is unnecessary. On the contrary, in cases where there is great loss of blood, drainage should be used. An alcoholic solution should be given to restore the circulation as rapidly as possible if the germs can not be absorbed from the wounds. This is a matter of vital importance. We must distinguish between those cases which require drainage and those which do not. It is not a local trouble, but a general condition of the system. If the members will review their cases and note which ones have become poisoned, they will find it was those in which there had been great loss of blood and the patients very much reduced in health.

Dr. Henry P. Newman, Chicago—This matter of drainage is of great interest, and I think some of the statistics are a little misleading in regard to its use, even those of Dr. Kelly. We do better operating than we did formerly, and our last one hundred cases are showing this. It is not to be ascribed in all instances to either the use or the non-use of the drain. Our work is cleaner; the tissues are better protected; the surfaces are less abraded; there is less handling of the intestines, less exposure, etc. Consequently we do not need to drain as much

as formerly, and necessarily we have better results. Then, too, the resisting power of the structures is correspondingly great as they are less manipulated and exposed, or brought under the influence of trauma.

With reference to the material used for drainage, I have used for the last six or eight years properly prepared wicking, which I have found far superior to gauze. It can be used in large quantities. Its threads are continuous and very easily removed. The capillary action is better and it is easier to introduce and remove. This ordinary lamp wicking is prepared very much the same as iodoform gauze, and it can be made antiseptic with any of the germicides. The advantage of this material in the abdominal cavity means simply more than drainage; it protects abraded surfaces and prevents adhesions of the intestines. I think we are learning to do away with the drain through the abdominal wall and shall soon use it exclusively through the vagina. The bugbear of vaginal infection is fast fading away.

DR. WARD—We are mostly agreed that we should not use drainage if it is not absolutely necessary. Gauze does not drain after twenty-four hours. A glass tube does not drain after twelve hours, therefore, we have gained twelve hours after that method by the gauze. Gauze will carry away all the material thrown out in the abdominal cavity. The portion on the outside will be filled with clotted blood. I believe that we should drain through the vagina where it can be done. The gauze must not be packed too tightly if we expect good drainage.

HOW TO CURE RHEUMATISM.

Read in the Section on Practice of Medicine, at the Forty-seventh Annual Meeting of the American Medical Association, held at Atlanta, Ga., May 5-8, 1896.

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The names of diseases are determined, principally by the prominence of a certain group of symptoms. The disease under consideration follows the general rule. Special names are attributed to particular groups of symptoms, all of which, however, constitute merely varieties of one disease.

Rheumatism is acute when it is recent, and chronic when the disease has extended over a longer period; articular, when the manifestation is chiefly in the joints; inflammatory, when the whole body exhibits the symptoms of inflammation and pain; muscular, when relating to the striated and non-striated tissues; sciatica and lumbago belong to the same family; even gout is itself closely related in its orgin, differing only in its symptomatology.

The present paper is concerned with a practical review of the author's system of managing this disease in its various forms.

Disturbance of nutrition with consequent impairment of the solids and fluids of the body, always precede rheumatism. Invasion of the soft tissues can not take place unless the functional activity of both structures is impaired. It is impossible to name the first symptom in the series of alterations of the elementary forms. But in almost all cases which have come under observation, certain functions are almost uniformly abnormal. Variation in the volume as well as the nature of the fluid elements of the body, and changes in the quality and proportion of the solids, are constant factors in the pathology of rheumatism. The influencing or producing causes of these changes in the body are, indeed, hard to exactly discover. But fortunately, they are not indispensable to successful treatment of the condition that requires remedial aid.

Whenever there are functional changes they consist for the most part, of abnormal muscular action in some portion of the body, principally with reference to the capillaries and small arteries. The same condition may be an exciting cause of other diseases, the peculiar spmptoms determining the character of the affection, being dependent upon the state of the general system of the individual. Thus a given influence may produce in different individuals quite contrary symptoms. With disturbed nutrition, alteration of the fluids and solids of the body are accompanied by obstructions in the circulatory and excretory systems. Lowered vitality is the necessary result, which is the basis upon which rheumatism is determined. If functional activity remains normal, the vital resistance of the soft structures prevent retention of the impurities. There is no one portion of the economy which suffers alteration so readily as the circulating fluids. Upon the relative maintenance of the normal proportion of the fluids and solids, the health of the body depends.

It has been found by examinations of the blood that there is a loss of balance between the fluid and solid ingredients. It has also been determined by scientific investigation, that the origin of diseases lies largely in the imperfect circulation of the fluid elements of the body through the capillaries, altering in turn the functional activity of the lymphatic vessels. Congestion is a disturbance, or, an obstruction in capillary circulation, whether it be in the surface of the body or in some internal organ. The consequent result, which follows even a slight interruption in these minute passages, produces obstructions which in turn, undergo changes that are fatal to the life of the elementary cell. If the harm done is slight, and the balance of the circulation is quickly regained, the symptom of this disturbance may not be even appreciable to the central nervous system. If, however, a great number of slight disturbances in the capillary circulation occur, the resulting evidence is determined by symptoms which are noticeable. There are many causes which may produce impeded vascular circulation in the minute spaces, the chief of which is some form of exposure of the body to external influences.

The first impression upon the system is necessarily received by the nervous system, and through it the influence is carried to the muscular structures. If the vitality is sufficiently strong the evil influence is scarcely appreciable, for it is the natural tendency of the system to recover from disturbed equilibrium. Few individuals there are whose physical condition is normal; consequently, the result of even a slight cause of physiologic disturbance is often productive of disaster. The point of my argument, at this time, is to establish the value, in the maintenance of normal health, of the part which is performed by preserving the quality and the volume of the circulating fluids.

The capillaries are so exquisitively small, that even the red cells themselves are unable to enter them. The watery element of the blood alone finding its way through the millions and millions of these diminutive channels. The ultimate cell depends for its nutrition upon the albumin, the fibrin and the salts which are held in solution by the water of the blood. Ever so small a disturbance in capillary circulation interrupts the processes of nature, and, if these instances occur sufficiently frequently, morbid products are retained in the lymphatics and the intercellular spaces. The efforts of physiologic action to remove and expel these products when retarded, constitutes the first

element in inflammatory processes. The accumulation of these minute centers of interrupted action, establish an appreciable area of disease, which spreads more and more according to the state of the tissues. When the area of inflammation is sufficiently large, and destruction of cells is advanced, the heat of the body is augmented, both by the decomposition of the morbid products, and by the physiologic disturbances produced throughout the system, constituting an inflammatory fever. With the determination of the fever, other symptoms appear which hitherto were not present in our picture of pathologic changes.

The exact pathology of rheumatism is undetermined. The analyses of the blood indicate no chemic or organic changes. The cellular structures are identical with those of usual conditions found in health. Lactic acid and uric acid and other chemic substances are not found to prevail to a greater degree than at other times. The only change that is discoverable, is the diminution of red corpuscles. The various theories concerning the cause and origin of rheumatism, in the light of the exact knowledge, determined by physic and chemic analysis of the blood, are not satisfactory. The exact knowedge on the subject consists in the single, positive statement that there is alteration in the number of red cells of the blood. In addition to this it is also able to be definitely stated that there is diminution in volume of the fluid element of the blood. These facts would seem to throw the responsibility upon the capillary circulation rather than upon change in the blood chemistry. It is upon recognition of the foregoing physical alterations of the blood that my practice in the treatment of rheumatism is founded.

Postmortem examinations reveal no changes not found in other diseases. Chemic analysis of the fluids and the solids of the rheumatic body are also negative in showing the origin of this disease. The flow of urine is greatly diminished and through this condition, it is able to determine that the volume of the blood is also diminished, corresponding precisely to the symptom of scanty urine. The average number of cases, in which the urine has been calculated as to the quantity, shows a uniform decrease as well as an increase in color and specific gravity.

After very careful examination of the extensive literature on the subject of rheumatism, my conclusions are as follows: that rheumatism is, so far as the conditions of the solids and fluids of the body are concerned, a disease not dependent upon chemic changes of the fluids; nor is it due to any particular chemical that may be found, either in the fluids or the solids of the body. The only definite knowledge that is irrefutable, is that there is a change in the physical character of the blood, consisting of an alteration of the relative proportions of fluid and solid elements.

The inflammatory processes which take place are similar to those in other diseases, under similar conditions. The differences in the forms of rheumatism are produced by variations of the intensity of the disease, and the state of health at the time of attack, of the individual. The three principal symptoms of rheumatism, namely, pain, fever and swelling are able to be explained by my hypothesis. The condition of impaired nutrition, and functional derangement of the bowels, either constipation or diarrhea, is almost constant.

Clinical experience teaches me, therefore, that the first indication in the treatment of this disease is the supply of proper and sufficient nutrition. The next indication is attention to the processes of elimination by which the system is relieved of dead matter. Nature is the greatest remedial influence in the cure, and whatever introduces new strength and saves the vitality is the safest therapeutics. Next in order in the line of remedial measures, is to restore and preserve the normal volume of the blood. If there is a reduction in the number of red blood corpuscles, that reduction, it is found, is only relative, for there is a consequent loss of serum. This condition is exactly determined to be true, by quantitive estimation of the urine of each twenty-four hours. The high specific gravity of urine, which is referred to as a prominent symptom in febrile diseases, is evidence that there is deficiency in the liquid element of the blood. Nothing could be more natural than a waste through the kidneys in proportion to the volume of blood serum, so that this symptom is so slight in importance, relative to the ease with which it can be corrected, that it is a surprise, that so much is made of it in referring to the symptoms of disease.

Every one of these pathologic and physiologic changes which have been enumerated in the paper, are directly amenable to control by the proper use of hydriatics. There is no question as to the fact. It has been so many times proven in my clinical work during the past period of six years, that it is no longer subject to the least doubt in my mind. It is not altogether an easy matter for those not acquainted with hydriatics, to give full credence to such positive statements, unsupported by clinical demonstrations in hospital wards. Neither is it an easy matter to learn the various processes which constitute intelligent and common-sense use of water, pertaining to the cure of this disease.

Before detailing the plan which is regularly followed in my practice, it is my wish to lay before you some therapeutic measures which were recently employed in the treatment of a case of acute rheumatism in one of the Metropolitan hospitals. The recital of this list of remedies may be instructive, as it furnished me many points for thought and criticism of the prevailing measures in vogue to-day, in the treatment of rheumatism. The list comprises the following drugs and remedies used upon one and the same patient, the result of which was the fatal termination of the patient:

Here it is: Salicylic acid, salicylate of soda, gaultheria, salol, salophen, antipyrin, iodid of potassium, wine of colchicum, iron, arsenic, strychnin, bicarbonate of soda, epsom salts, bromid of sodium, morphin, turpentine, lanolin, lard, digitalis, cod-liver oil, whisky, and menthol in alcohol. Great stress was placed upon the fact that 15 grain doses of salophen, combined with 15 grains of bicarbonate of soda, were borne by the patient at intervals of every two hours. The patient grew steadily worse from the inception of the treatment, and it would be strange indeed, had it been otherwise.

The criticism of this plan of treatment is not owing to a lack of an orthodox education, or to ignorance on my part of the recommendations of the materia medica. The practice of therapeutics has been going on for a period of, perhaps, over three thousand years, and while the list of remedies presented above does not represent the sum total of our ability in the treatment of rheumatism, neither does it reflect creditably upon the education and the intelligence of a learned

profession, and it is not strange that odious comparisons are instituted by the laity between the advancement of surgical treatment compared with that of medicine. There is some excuse in the allied sciences of electricity and other departments of physics, for imperfect processes, and room for further scientific development, but it seems to me there is hardly the same excuse for a class of highly educated, broad-thinking men who have had so many centuries during which to work, and in which to perfect the treatment of diseases of the human body.

We must remember that steam and electric energy are discoveries of comparatively recent years, and that further improvements are in order and perfectly natural; but we must also remember that the human body with its physiologic and pathologic nature has been known and practiced upon for more than thirty centuries. What hope for the future would there be if the foregoing list of remedies should be taken as the total of our ability in the treatment of this disease? If our science was no older than steam or the telephone, our mistakes would be but natural and pardonable. It is not wholly the fault of the physician that such an incongruous and contradictory collection of substances should be used in the treatment of rheumatism. The education of the people and the use of drug remedies from childhood, almost force physicians to employ them in the treatment of their cases. Beside this, the circulation of enormous quantities of spurious medical literature by commercial agents, advocating and urging the use of their patented and proprietary preparations, has a harmful and misguiding influence upon the younger members of the profession, who are eagerly seeking, and ready to receive information which purports to represent the very latest ideas in therapeutics. It is not my purpose to condemn or to harshly criticise any one in particular, but rather, in a sympathetically critical attitude to point the way to the truth.

The treatment of rheumatism by hydriatic processes is based now upon an experience in practice during a period of six years. The plan which is pursued is satisfactory to the highest interest of the patient and the physician. It is something that is definite; it is reliable, and the gains that are secured in the progress of the treatment are real, and can be determined with an accurrcy approaching true science. The only difficulty that is experienced in pursuing the hydriatic plan, lies in the fact that it is considered by the patient and friends as novel and, therefore, to be guarded against. Besides, the support of the profession, is withheld, owing to misunderstanding, by reason of clinical inexperience, lack of actual knowledge, and doubt, which operates to the disadvantage of both the physician and his patient. It takes a great many clinical experiences to establish the courage of one's own convictions, and until belief is based upon many carefully conducted experiments, there is always room for a question whether it is right or wrong. The disposition is, among clinicians, to prove each point in practice and to lean toward conservatism. For my part, my courage is established, and the practice of hydriatics, according to my experiences, is now approaching a definite and scientific system of therapy.

For the purposes of clinical practice the gross symptoms of rheumatism are sufficient in all cases to determine the line of treatment. It is only where experiments for scientific purposes are instituted that differentiating instruments and chemic tests are employed. When first called to see a patient it is of course impossible in most cases to exactly determine, even to my own satisfaction, the precise nature of the affection. The first inquiries that are made of the patient refer to the general condition, followed by questions and examinations to determine the details concerning the physiologic functions. Inquiry is especially directed to the excretory system, with reference to the quantity of urine which is passed, the condition of the bowels, the appearance of the skin and the mucous membrane, and especially the state of the appetite, the kind of food taken, and the habits with reference to the nature and the quantity of fluids taken as drink. The temperature of the body, the movements of the pulse and the subjective symptoms of the patient, constitute a list of inquiries sufficiently to determine the treatment. The physiologic requirement of the system is two litres of water per day. In no single instance of a case treated has this quantity been consumed by the patient prior to his sickness.

The treatment is begun by prescribing regular, definite doses of pure, soft water at frequent intervals. Each dose of water contains some harmless remedy to satisfy the notions of the patient and his friends. The amount of water which is prescribed at each dose is scientifically determined by the whole weight of the body, the age of the patient and the degree of the fever. Starting upon the basis of an average man, two to four litres of pure water is prescribed every day, in properly apportioned doses, to avoid mistakes and excessive use of water at any one time. If the patient were of seventy-five pounds weight my estimate would be that one and one-half to two litres of water would be absorbed per day with comfort and advantage. The next process in the use of hydriatics is irrigation of the bowels if circumstances favor it. One teaspoonful of elixo, a liquid soap, is mixed with the water used for irrigations. Many cases have been treated by me, in which it was inconvenient or undesirable to practice irrigation of the bowels. It is therefore, established clinically that while irrigation is in all cases an aid to treatment, still it is not indispensable.

The third hydriatic process is the use of water upon the surface of the body. If the patient is agreeable to direction and conveniently located, the full bath is recommended. The temperature of the water should be a few degrees below the temperature of the body. When the toilet room is inaccessible or it is inconvenient to remove the patient, three bathing processes are followed in my practice: 1, sponging the body with water from a basin; 2, the wet pack; and 3, the use of my sprinkle-bath. The sprinkle-bath consists of cool water applied to the surface of the body, at intervals of two or three hours, during the day and evening, by means of a small sprinkle nozzle attached to the end of the tubing of a fountain syringe, which is suspended from a chandelier, bedpost or a nail in the wall. Swelled and painful joints are packed in a compress of cold water until relief comes. Briefly speaking, the foregoing measures have availed in the treatment of rheumatism. The precise detail work must necessarily vary in every case. The food is immaterial; whatever is the most simple, the easiest to provide and which is agreeable to the patient, is all that is required. Purposely the recital of cases has been omitted. Such recitals are tedious, and for this reason are omitted from this paper.

103 State Street.

DISCUSSION.

DR. LOUIS FAUGERES BISHOP, of New York—I do not think we ought to pass over the subject of rheumatism without any consideration of the fact that in all probability acute rheumatism is of miasmatic origin. I think that any one who studies the whole literature of the subject will come to that conclusion.

Further discussion was interrupted by the lateness of the hour.

MALARIA.

BY ELLSWORTH D. WHITING, A.B.
AURORA, ILL.

(The L. P. C. Freer Prize Essay, Rush Medical College, 1896.)

(*Continued from page 123.*)

Before entering upon a systematic study of the organism, a description of the manner in which specimens are obtained may be of advantage.

The technique of obtaining specimens for a fresh examination, though simple in theory, presents many slight, but annoying, difficulties in actual practice. The main points ever to be kept in mind are cleanliness, quickness and skill of hand and eye. The instruments necessary are a small lancet, two pairs of blood forceps, slides and cover slips. The site of puncture should be thoroughly cleansed, first with soap and water to remove dirt, secondly with alcohol to remove oily materials, and then allowed to dry.

Blood for examination may be taken from any part of the body. In adults the finger tip or lobe of the ear is most satisfactory. The writer has had most success in taking specimens from the lobe of the ear. Here there is practically no pain; a very minute puncture only is required to obtain the necessary amount of blood; it is out of the sight of the patient; immobility is easily obtained and infection is not liable to follow. The puncture of the finger tip is painful; being in the sight of the patient much annoyance is caused in children and hysteric subjects and there is more danger of infection. In infants the most desirable site is the inner surface of the heel.

Great cleanliness should also be observed in the preparation of the slide and cover slip. Both should be thoroughly cleansed immediately before using. In preparing the cover glass it should first be allowed to stand in 25 per cent. sulphuric acid for one half hour. It should then be washed in alcohol and finally dried with a perfectly clean and dry silk or linen handkerchief. In the preparation of the slide such precautions are not necessary as cleanliness can be secured by brisk rubbing.

If it is convenient it is of great advantage to have the slide as near body temperature at possible. This may be obtained by the judicious use of the alcohol lamp or by friction at the hands of an assistant.

The site of operation and the necessary articles being in readiness, a slight puncture, directed upward, is made in lowest point of the lobe of the ear. The lobe is then turned upward and the blood allowed to flow without pressure. The first few drops are wiped away when a cover glass held in blood forceps is touched to the summit of the following drop as it emerges from the opening. The slip is then quickly transferred to the slide. In order to guide and steady the hand that the cover may not touch the skin, the following procedure may be followed. Let the left hand, which is holding the lobe of the ear, rest against the neck of the patient, then by placing the fingers of the right hand, in which the cover slip is held, lightly upon the left hand, steadiness and accuracy of tactile sense may be acquired to a remarkable degree. It is also of advantage to hold the forceps as near the cover slip as possible.

If the cover slip and slide have been perfectly cleaned; if the operation has not taken too long and the cover glass has not touched the skin nor the drop been too large, the blood on touching the slide will immediately spread out between the slide and cover glass. No pressure should be applied. On microscopic examination the corpuscles will be seen to lie separate and distinct side by side and unaltered in the surrounding plasma.

Often in spite of the most careful preparations the drop of blood will not spread, a condition which the uninitiated will be at a loss to explain. This may be explained in four ways at least:

1. After immersing in sulphuric acid, the acid may not have been entirely washed away. Especially does this occur when a number of slips are washed at the same time. Long cleansing in water is necessary to thoroughly remove the acid. When the acid can not be tasted it will do no harm in the spreading, fixing and staining processes.
2. A raveling may be found lodged in between the slide and cover slip, which prevents the hugging of the slide by the cover glass.
3. The surface of the slide may be uneven.
4. The slip may be warped.

Blood prepared in this manner will keep from one and one-half to two hours without crenating and may be kept longer by annointing the edges of the cover slip with vaselin or glycerin. In the examination of blood for the organism of malaria a one-twelfth oil immersion objective with ocular number five is recommended. These high magnifications are not absolutely necessary. Laveran made his first observations with dry lenses of low powers.

The preceding methods are the simplest and most practical for clinical work. Some observers use methods much more complex. Hayem's slide is used to some extent. This consists of a hollowed out slide. The drop is placed in the depression and protected by a cover slip. Plehn describes a most elaborate method by which he keeps microscope, slide and specimen at body temperature. He mounts his specimens in parafin and thus keeps them intact for three hours.

In the preparation of dried specimens for future staining the technique is the same except that instead of placing the drop collected on the slip upon the slide, it is placed upon a second slip, held likewise with blood forceps. The slips are left in contact from one to two seconds when they are drawn apart being continually held by forceps and the lines of force kept parallel. They are then set aside to dry with the clean side down. The drying process takes but a few moments.

When it is necessary to take dried specimens without aid, the operator is compelled to fall back upon devises which may best suit the circumstances. The writer has been very successful in the pursuance of the following plan. One cover slip is placed upon a clean piece of paper at the very edge of a table while the second cover when the drop of blood is collected is placed upon the first. As the blood cements the slips together both are raised by lifting the one in the grasp of the forceps when they may easily be separated.

Before specimens can be stained they must be

fixed. Fixation consists in bringing about some molecular change in the corpuscles in which condition certain elements take certain stains. The nature of this process is not known. Some say that the change is that of coagulation of the albumin, but this can hardly be true as carbolic acid does not fix blood. Fixation is probably simply a process of dehydration.

There are many methods by which blood is fixed. This may be accomplished by passing through a flame, heating at 120 C., immersing slips in picric acid, mercuric chlorid, absolute alcohol, osmic and glacial acetic acid or alcohol and ether, equal parts. The writer has been most successful in the use of the latter method. He generally leaves the specimens in the fixing agent for twelve hours but good results have been obtained after one-half hour's fixing. Unsuccessful attempts at fixing with alcohol and ether often arise from the fact that the alcohol is not absolute or contains enough acid to destain the specimen. Commercial alcohol is rarely pure. The reagents used in the fixing of blood should be distilled for the purpose and kept in an air-tight container.

Results obtained from heating on the graduated bar are variable, due to the fact that it is exceedingly difficult to keep the bar at an even temperature. In this method of fixing, an ordinary one-burner oil stove is used. Across the top of the stove is placed a copper bar two feet in length, four inches in width and one-eighth of an inch in thickness. After the bar has attained a stationary degree of temperature, the boiling point is determined. This is accomplished by dropping water upon the bar and noting the point at which it boils. At this point a line is drawn across the bar and a row of slips, smear side down, are placed one inch within this line. The specimens are permitted to remain at this temperature from one to three hours. Although simple of description this method is open to many criticisms. The apparatus must be continually watched, as a rise of temperature ruins the specimens. It is best to protect the bar as much as possible from drafts and to determine the temperature every few moments with water.

Many investigators have used an oven in which the temperature may be accurately regulated. By means of this devise good results have been obtained.

The parasite of malaria takes the stain of all basic anilin dyes. It is unaffected by the acid dyes except when they are of great strength and left in contact with the organism a long time. These facts have given rise to a host of methods of staining, a description of all of which would be futile; therefore a few of the more important ones will be described.

An exceedingly interesting and ingenious method is given by Celli and Guarnieri, who succeeded in staining the parasite while alive. For this purpose they employed aseptic ascitic transudation in which methylene blue was dissolved. They placed this solution over the site of the puncture, allowing the blood to flow with the fluid, which was quickly transferred to the slide. It was then kept in a warm moist chamber for three hours, when the organisms were seen to be well stained. This method, however, does not procure permanent specimens.

Chenzinsky successfully stained specimens which had been previously fixed and dried by placing them for five minutes in a mixture composed of a 50 per cent. aqueous solution of methylene blue, and an equal amount of 5 per cent. of eosin, in 60 per cent. alcohol.

A cumbersome yet ingenious plan has been devised by Feletti. After allowing a 25 per cent. alcoholic solution of methylene blue to dry upon a slide he places upon it a cover slip upon which a drop of blood has been collected. He then surrounds the cover slip with parafin. The serum of the blood dissolves the methylene blue, which stains the organisms.

Mannaberg, after fixing the specimens in alcohol and ether, equal parts, for half an hour, stains them in a concentrated aqueous solution of methylene blue for an equal length of time. After having been washed and dried in water, the specimens are left for thirty minutes in a 2 per cent. solution of eosin in 60 per cent. alcohol. They are then washed, dried and mounted in balsam.

The method described by Romanowsky is effective yet impracticable for routine work. Immediately before using, he makes a fresh solution composed of one part of a filtered, saturated, aqueous solution of methylene blue, to two parts of a 1 per cent. watery solution of eosin. The specimens, fixed by heat, are floated smear side down upon this mixture, contained in a watch glass. The specimen is covered by an inverted glass and the whole enclosed in a moistened beaker. The specimens are allowed to remain in this solution from one-half hour to three hours. By this method Romanowsky claims that he stains the red corpuscles red, the parasites blue and the nuclear chromatin violet.

Mannaberg has devised a method by which he brings out in great clearness the finer structure of the parasite. At first the dried specimens are floated for a few moments upon distilled water, and after being dried are bathed in dilute acetic acid until there is a complete disappearance of the hemoglobin. The specimens are then permitted to float for two hours upon the following fixing solution:

Concentrated aqueous picric acid . . .	20 c.cm.
Distilled water	30 c.cm.
Glacial acetic acid	1 c.cm.

The specimens are next placed in absolute alcohol for twenty-four hours. After this they are stained from twelve to twenty-four hours in a solution consisting of one part of hematoxylin (hematoxylin grams 10 to 100 c.c. acid alcohol) to two parts of a .5 per cent. ammonia alum solution. The specimens are destained in acid alcohol (hydrochloric acid 25 per cent., alcohol 75 per cent.) and ammonia alcohol (three drops of ammonia to 10 c.cm. 75 per cent. alcohol). They are then washed in 8 per cent. alcohol and mounted in balsam. By this method the parasite and leucocytes are stained blue, the red corpuscles being colorless.

The preceding methods and numerous others have been used since the discovery of the organism by Laveran and the staining methods set forth by him. Moreover, the method advised by him, although the simplest and oldest, is most practical and efficient for ordinary use. Laveran fixes blood in alcohol and ether equal parts. He first places the specimen, for thirty seconds, in concentrated aqueous eosin, and after washing and drying, stains for thirty seconds in concentrated aqueous methylene blue.

In his experimentation with staining the malarial organism the writer, although he has used the methods of Laveran to considerable advantage, has been most successful in the use of methylene blue alone. He finds that as the organism is endoglobular, its outline is blurred to some extent by the eosin. Speci-

mens stained in aqueous solutions are more easily decolorized by washing in water than those stained in alcoholic solutions.

No definite limit can be given to the length of time and strength of dye required to properly stain a specimen, even when the strength of the staining reagent is known. These points can be accurately estimated for normal blood, but as it is a rare occurrence for two pathologic specimens to be physiologically the same, their staining is necessarily a subject of great variance. To procure a properly stained specimen it is necessary to obtain its stain-absorbing qualities by making a test specimen. This is accomplished by applying a stain of known strength for a certain noted time. Using this as a guide, a good specimen may be obtained by varying the strength of the stain and length of the time of its application. A good standard for comparison may be found in the leucocytes. When the small lymphocytes take a deep blue stain and the large polynuclear neutrophiles a faint blue, the methylene blue is of proper strength. When the leucocytes are thus colored the malarial organism will be distinctly stained and therefore recognizable. The eosin should but faintly color the red corpuscles.

When the staining is completed previous errors, if they exist, are brought to light. If acid is present, specimens refuse to stain. If the specimen is thick individual corpuscles are not distinguishable. If the blood has been allowed to dry before separation of the slips the corpuscles are not arranged evenly, but in concentric circles and rows. If the blood was forced from puncture there will be a large amount of plasma present which will obscure the field. If fixing material has not been pure, the specimen will not stain. If the heating apparatus has become overheated the corpuscles will be ruptured, charred and disintegrated.

In the examination of blood for the "plasmodium malariæ" most satisfactory results are obtained by examining fresh specimens. The great advantage of this method lies in the fact that the ameboid movements of the organism may be observed.

The organism must be differentiated from, 1, blood plaques; 2, vacuoles; 3, discs of red corpuscles; 4, crenated corpuscles; 5, oil globules (?).

1. The blood plaques are colorless, extra-corpuscular and might be readily mistaken for hyalin forms of the organism, were the ameboid movement not considered. The plaques are more translucent, their outlines more clearly marked and irregular than hyalin bodies. There is a tendency toward the grouping of the plaques in grape-like clusters. On staining they take the methylene blue, as does the organism, and must be differentiated by position and contour.

2. The vacuoles are lighter in color, translucent, outlines distinctly marked, are non-motile and always spherical in form.

3. Discs of red blood corpuscles are spherical and when present are usually found in large numbers and situated in the center of the corpuscle, except in cases of poikilocytosis. These discs are of indistinct outline, non-motile, and when present in small numbers they can only be differentiated from resting hyalin bodies by staining methods.

4. Crenated corpuscles appear as coarsely spiculated balls. These spicula are caused by the irregular contraction of the cell wall of the red corpuscle(?). Although colorless these spicula appear black when viewed through reflected light, and on this account are often mistaken for pigmented organisms.

5. It is scarcely necessary to differentiate hyalin bodies from minute, spherical, translucent, rapidly moving bodies which are frequently seen in the blood of malarial patients. These particles are found in normal blood and their nature is unknown, but they probably consist of oil globules from sebaceous glands, commingled with the blood during its exit from the puncture.

It is of vast importance in the differentiation of the hyalin bodies from the foregoing bodies to note the kinds of motion visible under the microscope. In the field can be seen distinct currents, probably produced by heat radiation. These currents give to the corpuscles a vibratory, oscillating and rotary motion, which is in turn transmitted to the contents of the corpuscle. These movements are possessed by all of the previously described bodies, plaques, vacuoles, discs, crenated corpuscles, and oil globules, and must not be confounded with the ameboid movements of the malarial organism, which is entirely independent of currents; is slow and characterized by a change in *form* of the parasite.

Through the opportunities afforded by the medical clinics of Rush Medical College and the medical wards of Presbyterian and Cook County Hospitals the writer has been able to observe and study the blood changes in many malarial patients. The classification proposed by Thayer and Hewetson will be adopted in the following description:

In describing the tertian parasite the writer will make use of a series of specimens taken from a patient in Cook County Hospital, exhibiting tertian paroxysms. Specimens were taken every four hours, night and day, for forty-eight hours. In this manner a complete cycle of the life of the organism was obtained. By a microscopic examination of these specimens stained with methylene blue the entire development of the organism was traced with remarkable accuracy. Fresh specimens were examined as far as possible. The patient's history is taken from history sheets of the hospital, and the temperature recorded by the writer at the time the specimens were taken. The blood count was made after the series was completed.

James W., admitted Feb. 2, 1896; age 31; born in Scotland; single; carpenter by trade. Family history: father had stroke of paralysis some years ago, but is still living; otherwise negative. Personal history: has been in Chicago eighteen months; drinks occasionally, smokes, habits regular, no venereal history; has been working of late in Brighton Park. Previous illness: measles and whooping cough. Present illness: had first chill last April, which was followed by chills every other day. These disappeared upon the administration of quinin, but reappeared late in September, occurring every other day. The attacks were again stopped by quinin. The last attack began February 1 and patient has had a chill every other day since. Chills occur between 6 and 8 o'clock in the morning. During the chill the patient complains of great pain in the back, head, left side and shoulder; the chills are followed by high, burning fever, profuse perspiration and great prostration. Appetite poor and bowels regular.

Physical examination.—Body well nourished; mind, clear; eyes and pupils normal; tongue, clean; pulse, full and strong; thorax, well developed; heart negative; lungs, negative. Abdomen: liver normal; spleen (palpable) is situated in mammary line from sixth rib to one inch below costal arch. Limbs, negative; no adenopathy. Hemoglobin, 67½ per cent.; red corpuscles, 4,500,000; white corpuscles, 5,000.

In this description of a serial examination the writer shall attempt to follow out the development of the organism, commencing with the group of hyaline bodies

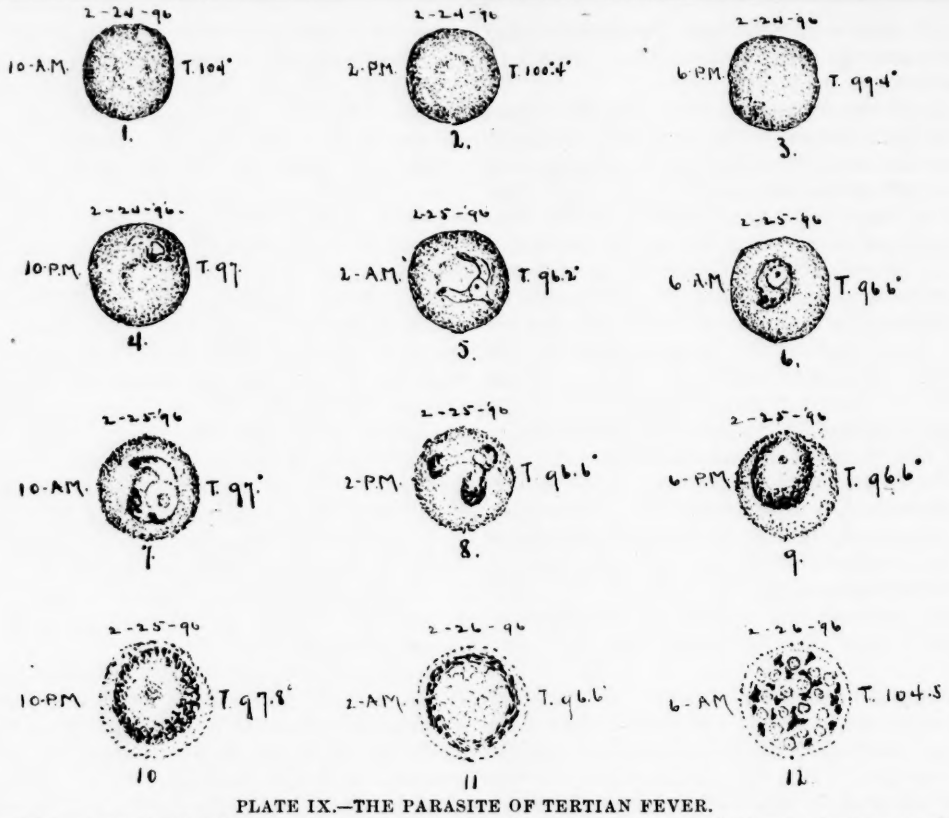

PLATE IX.—THE PARASITE OF TERTIAN FEVER.

EXPLANATORY.—1, 2, 3, Hyaline Forms; 4, 5, Beginning Pigmentation and Appearance of Nucleus; 6, Appearance of Nucleolus; 7, 8, 9, Further Development of Organisms; 10, Full-grown Organism; 11, 12, Segmenting Forms. Magnification—Zeiss, Obj. 1-12 oil immer., Oc. 5. From James W., C. C. H., W. 4. See also Plate XIV.

present in the first specimen. However, he wishes it distinctly understood that he does not for an instant intimate that the separate stages of the parasite described include all the organisms present in the blood at the stated times. As a matter of fact, in every slide examined adult, intermediate and hyaline bodies were demonstrable, although these latter forms in some instances were present in small numbers. In the great majority of cases of malaria examined by the writer he has been able to demonstrate every form of the organism at any time during the course of the disease. This fact has therefore led him to conclude that pure forms rarely or never exist. The symptoms are caused by larger groups of organisms.

The first specimen (Plate ix, Fig. 1) was taken Feb-

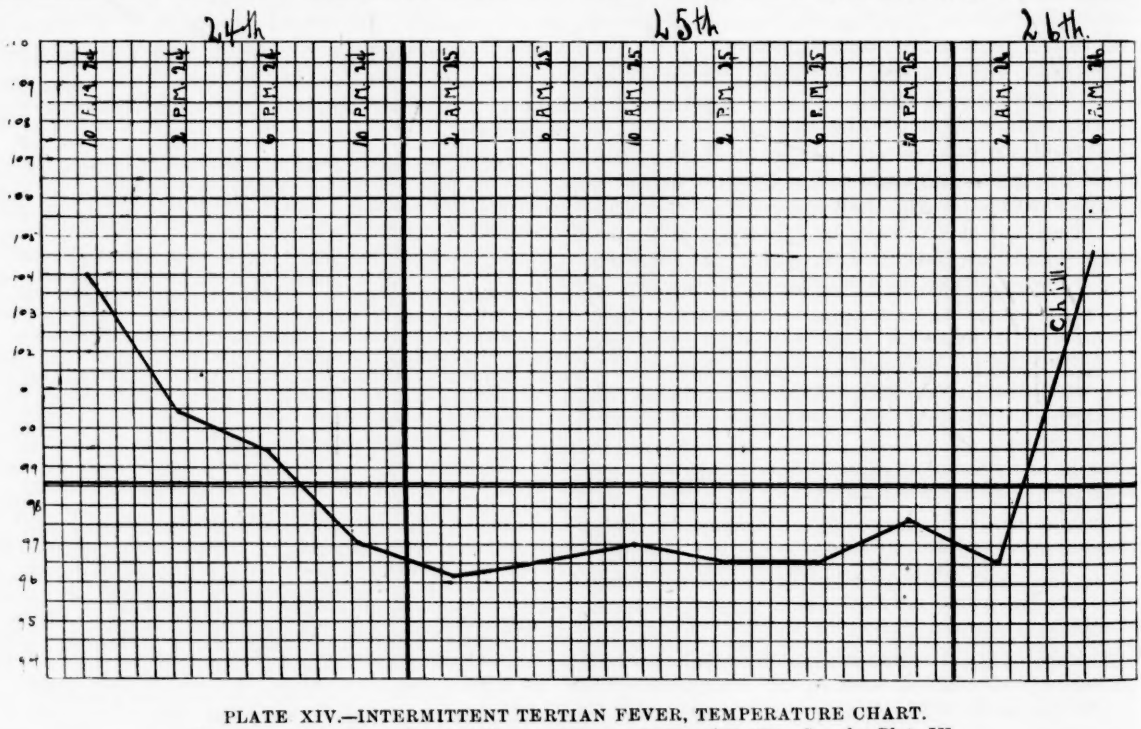

PLATE XIV.—INTERMITTENT TERTIAN FEVER, TEMPERATURE CHART.
James W., Cook County Hospital, Ward 4, February 24, 25 and 26, 1896. See also Plate IX.

ruary 24 at 10 o'clock in the forenoon, one hour after the chill, the temperature being 104 degrees F.

On examination of fresh specimens, many organisms were present in various stages of development, the hyaline forms, however, being in the greatest numbers. These consisted of small, round, endoglobular motile bodies. The ameboid movement at this stage was marked, a complete change of shape taking place in a few moments. These forms have been described as colorless, but this is probably not strictly true, as they seem to possess a very faint shade of color similar to that of the red corpuscle. The borders were indistinct, the blending thus produced often making it difficult to distinguish the point where organism ended and corpuscle began. Although there were organisms within and outside the corpuscles, none were seen in the act of entering, a circumstance which has never been observed. At this stage no nucleus could be demonstrated in the fresh specimen.

Specimens were also stained with methylene blue. The periphery of the organisms took a greenish-blue stain, fading toward the center into a lighter shade of the same color, indicating the embryonic nucleus. In this specimen, beside the adult and hyaline bodies many degenerate forms of the organism, together with degenerate red corpuscles and free pigment granules, were present.

The second specimen (Plate ix, Fig. 2), taken the same day at 2 P.M., the temperature having fallen to 100.4 F., showed a large number of hyaline forms somewhat larger than those observed in the first specimen. These possessed the same activity, no pigmentation was demonstrable. A marked decrease in the number of adult organisms was noticed, also the absence of free pigment.

The third specimen (Plate ix, Fig. 3), taken the same day at 6 P.M., the temperature being 99.4 F., showed the same characteristics as the foregoing, except that the hyaline bodies were larger and a more clearly defined nucleus was present. This nucleus nearly filled the organism. In most instances it was round, regular and distinctly outlined. On staining with methylene blue, while the surrounding protoplasm took a deep greenish-blue color, the refractive nucleus showed a faint blue. No nucleolus was demonstrable.

Specimen four (Plate ix, Fig. 4) taken the same evening at 10 o'clock, temperature 97 F., showed that the organisms had increased in size, and for the first time an increase in size of 'the red corpuscles was noted. Slight pigmentation was also observed in the periphery and pseudopodia. This pigmentation consisted of small brownish granules or rods, closely resembling bacilli. These were in rapid motion. This motion was not brownian in character, as the granules appeared to pass from one portion of the organism to another. The nucleus was well marked. By careful focusing, a small area at the side of the nucleus, encroaching upon the cell body, was observed in stained specimens. This area, which is composed of chromative filaments, stains with methylene blue and corresponds to the nucleolus of Mannaberg, Feletti and Grassi, and was demonstrated in only a few instances. At this stage the peculiar forms which the parasite assumes were very apparent. At times the organism would lengthen out into a long, curved, crescented shape. Again it would assume a spherical contour, or the form of a cross.

The fifth specimen (Plate ix, Fig, 5) showed a progressive growth in both size of organism and number of granules. There was also present a pronounced increase in the size of the corpuscle with a noticeable decrease in its coloring matter. However the most marked new feature was the decided prominence of the nucleolus which though scarcely perceptible in the former specimens could be easily seen in this one. The chromatin fibers in one instance filled up fully one-eighth of the nucleus while a few could be traced to the nuclear membrane.

Specimens six, seven and eight (Plate ix, Figs. 6, 7 8) showed a decrease in the number of organisms present. However, in those present there was noted an increase in pigmentation, size of organism and corpuscle.

On examination of specimen nine (Plate ix, Fig. 9) several startling facts were brought to light. As if by magic the field teemed with organisms in numerous instances, as many as ten organisms being present in the same field at the same time. The explanation of this phenomenon, that is, the great difference in the number of organisms present in so short a time, probably is that the parasites were collected in the internal organs when specimens six, seven and eight were obtained. These organisms showed especially a great growth of nucleus and nucleolus. In many cases the ectoplasm, or portion surrounding the nucleus, staining deeply and containing the pigment, formed but a narrow band around the nucleus. The nucleus often seemed to be double, consisting of two equal or unequal portions. On close observation and careful focusing it was possible to distinguish narrow bands of ectoplasm stretching over the nucleus or endoplasm, but not *through* it. Some organisms of normal size and appearance were present which appeared to possess no nucleus, but here again very often careful focusing showed that we were probably looking upon that portion of the ectoplasm which covers the endoplasm. In some instances organisms of this description showed no nucleus whatever. There were moreover, many large extra corpuscular, irregular, granular, pigmented bodies having no nuclei which were probably degenerated organisms. These bodies were often filled with vacuoles.

In specimens ten, eleven and twelve (Plate ix, Figs. 10, 11, 12) were found many adult forms which in size equaled that of red corpuscles. These were endoglobular or free in the plasma. When intra-corpuscular the corpuscle was greatly enlarged and decolorized, the cell wall showing as a thin film. The pigment granules were motionless.

In specimens eleven and twelve (Plate ix, Figs. 11-12) segmentation was observed in two forms. In the first a very large nucleus was observed, in which, and partially filling it, could be made out faintly staining, sporelike bodies, numbering from fifteen to thirty. The second form showed the organism diffusely and faintly stained throughout, in which pigment granules and sporelike bodies were scattered. This second form was probably a later stage of the first described, and resulted from the rupture of the nuclear membrane, setting free the sporelike bodies or daughter-nucleoli into the ectoplasm. These bodies seemed to contain distinct nuclei, and though nonmotile while in the organism, appeared to acquire motion on reaching the plasma of the blood. In no instances was fragmentation observed, nor Golgi's rosette forms.

Thus we have followed the tertian organism through

the cycle of its existence, and have once more arrived at the hyaline forms.

As regards the function and mode of reproduction of the elementary parts of the organism there is to-day a difference of opinion. Grassi and Feletti are of the opinion that the process of reproduction originates in the nucleolus. This, on dividing, is at first surrounded by the nuclear juice, a semifluid substance, which, together with the fibrils running from the nucleolus to the nuclear membrane forms the nucleus. In a short time these daughter nucleoli receive membranes and constitute the spores. The pigment is developed and retained in the surrounding ectoplasm. These pigment granules he supposes are formed from the hemoglobin of the corpuscle, but do not react to tests for iron.

Romanowsky goes so far as to say that by the use of eosin and methylene blue he has been able to distinguish karyokinesis during segmentation.

Mannaberg, in speaking of the development of pigment, agrees that it is first seen at the periphery of the organism in the outer plasma or ectoplasm. His theory of reproduction is unique. He holds that the nucleolus shortly before segmentation entirely disappears, withdrawing from the nuclear portion of the organism into the ectoplasm. It soon reappears in the nucleus and segmentation progresses as described by Grassi and Feletti. Investigators agree that reproduction is in all probability accomplished in the same manner in the parasites of tertian and quartan fever, but in the estivo-autumnal type no nucleus has as yet been demonstrated.

There is to-day, as there was at first, a difference of opinion in regard to the nature of the flagellate bodies. The two theories still exist, Laveran and his associates contending that these forms are reproductive in their functions, while Golgi and his followers insist that they are degenerate. The theory that they are produced by thermic influences has been generally abandoned.

(To be continued.)

A NEW OPERATION FOR THE RADICAL CURE OF INGUINAL HERNIA.

BY GEORGE TULLY VAUGHAN, M.D.

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Of the various operations for the radical cure of inguinal hernia, I believe it is generally agreed that those of Bassini and Halsted respectively are the best; as to the choice between these two methods there is some difference of opinion.

Unquestionably the method of Bassini comes nearer to restoring the tissues to their original condition and relations before they were stretched and distorted by the protruding viscus than any other operation now before the profession, and the number of relapses following this operation when carefully done is probably less than from any other.

Halsted's method has the appearance of strengthening a naturally weak place in the abdominal wall by increasing its thickness beneath the cord by the addition of the aponeurosis of the external oblique and some fibers of the internal oblique and transversalis muscles, but he brings the cord straight through the entire thickness of the abdominal wall (except the skin and fascia) at a point slightly higher and more external than the normal position, dividing partially the external, internal, and transversalis muscles in order to do so.

In the operation proposed the normal inguinal canal is obliterated, the cord is placed deep, next the peritoneum and passes through the abdominal wall both obliquely and where it is strongest, more than half the circumference of the anterior opening being formed by bone and tendon.

Another advantage is that the two ends of the inguinal canal are placed nearer on the same level, so that a viscus engaging in the posterior end would not have the same tendency, not being aided by gravity, to descend through the canal, as it does when the anterior opening is lower than the posterior.

Two objections would naturally be suggested to this operation; 1, that division of the muscles forming the conjoined tendon weakens the abdominal wall, and 2, that the new position of the cord may produce constriction and harm the testicle. To the first objection it may be said that with aseptic care and accurate approximation the muscle unites through the medium of muscular tissue not connective tissue. (See Senn, Principles of Surgery 1896, p. 46, and others) and is probably as strong as ever.

So far as I have heard, Halsted has had no trouble from dividing the muscular fibers above the internal ring and relapses from Halsted's operation, judging from my own experience, are owing to the cord being brought straight through the abdominal wall instead of obliquely, and, that this opening is surrounded by yielding muscle unsupported by bone or tendon. In reply to the latter objection I can only say that there has been no interference with the integrity of the testicle in any of my cases. The objection to bringing the cord out over the symphysis pubis in a more exposed position is of no importance.

The operation is performed as follows:

1. Make an incision over the inguinal canal from the internal abdominal ring to the center of the symphysis pubis through the skin and fascia; then split the fibers of the aponeurosis of the external oblique, exposing the cord and hernial sac.

2. Separate the sac from the cord, ligate or sew across well within the internal ring and cut off the redundant part.

3. Divide the conjoined tendon through it's muscular part four or five centimeters above its insertion including the internal pillar of the ring, down to the peritoneum, avoiding the deep epigastric artery.

Separate by blunt dissection the conjoined tendon from the rectus and pyramidalis muscles down to the pubic bone and place the cord in this position between the conjoined tendon and rectus. The cord still passes through an oblique canal at its anterior portion, as the conjoined tendon overlaps the rectus and pyramidalis for two and a half centimeters or more, being inserted in front of these muscles. Unite the divided ends of the conjoined tendon and of the internal pillar with mattress sutures, and accurately approximate them with continuous or interrupted sutures.

4. Close the old inguinal canal with interrupted sutures, uniting Poupart's ligament to the conjoined tendon, and in the outer part including the transversalis fascia over the cord. I usually pass two or three of these sutures through the conjoined tendon to include the edge of the rectus.

5. Unite the superficial structures with a continuous suture and the skin with a subcuticular suture.

Kangaroo tendon is the best suture material to be

used throughout the operation. The cord is thus placed next the peritoneum and brought obliquely through the abdominal wall at the strongest point. This operation is more difficult and requires rather more time in its performance than that of Bassini. I have performed it only five times but so far as known the results are all that could be desired. One patient was seen five months after the operation. He had been at work and was then in good condition. The others have not been heard from though they were requested to write to me in case of relapse.

SELECTIONS.

Pica or Dirt-eating Among Children.—In Volume I of the *Edinburgh Hospital Reports* for 1895, Dr. John Thomson publishes a study of this morbid habit in the various parts and periods of our planet. It is his belief that the dirt has a well defined hygienic value, and is eaten by children for medical purposes. The physical ailing which brings on the appetite for dirt is in most cases anemia, which simply means a running down of the system. In these cases, the habit might be formed from an instinctive craving for earthy salts, such as iron and lime, just as a cat or dog, when needing a little physic, will eat a blade or so of grass. The eating of substances of various kinds which are not wholly indigestible, but are also devoid of any natural attractiveness of taste, is a morbid habit which has often been observed both in human beings and among certain of the lower animals. Many names have been applied to this craving, such as pica or kitta (the Latin and Greek words for a jay or magpie), geophagie, allotriophagia, malacia, mal d'estomac; and it has been observed to occur under a considerable variety of conditions. From his experience and that of others in the reported cases collated by him, Dr. Thomson formulates the following eight principal points of the natural history of this affection: 1. Surroundings and upbringings. Some of the patients had been much neglected in every way; but quite as many of them were evidently, so far, at least, as their bodily condition was concerned, most carefully tended. The moral training may, perhaps, have been deficient, however. 2. Bodily condition. In many of the cases diarrhea existed, in some otorrhea, and other minor complaints. In most there was no sign of organic disease, no special anemia, and no indication of the presence of worms. No connection could be traced between the commencement of the habit and the state of the teeth, or of the diet in any case. 3. Mental condition. All the children seemed quite normal mentally, and there was no other bad habit constantly, or even frequently, found associated with this one. 4. Beginning of the habit. When the pica began it was often difficult to fix the time exactly, because it had attracted so little attention at first; but the age given varied from four to eighteen months. Probably this depended chiefly on the chances the child had of getting at the forbidden articles, his freedom from restraint, and his powers of locomotion. 5. Cessation of craving. It is interesting to notice that in those cases where the habit was formed in early infancy, and where the patient was some time under observation, the craving ceased entirely (in all but one instance) at about the age of three years. This seems probably connected with the growth of the child's intelligence and the widening of its interests. 6. Substances eaten. In some cases only one or two abnormal things are eaten; in many, almost anything within reach is swallowed. From the cases reported here and elsewhere it seems that the variety of the unnatural substances craved for is much more limited in cachectic cases than in those beginning in young babies. 7. Physiognomy. Children who have suffered from pica for some time usually have a peculiar look about the face. Their complexion has has not the rosy tint of healthy childhood, it lacks clearness, and is dull and unhealthy looking. 8. Results of the practice. In those of the cases in which the children were allowed to indulge their craving to any great extent, there was always some diarrhea, and occasionally obstruction from impaction of hard bodies in the rectum. In none of his cases was the patient ever seriously ill as the result of the habit, but instances have been recorded which have ended fatally. Under the head of treatment, the author holds that medication plays but a small part, while a modification of the morbid environment is the main issue, and in this relation the following summary will point out the chief indications: 1. Keep the child away from the substances for which he has a morbid craving. All habits are strengthened by practice, and their hold slackens under disuse. 2. Improve the condition of the digestion. It seems more than likely that local uneasiness often plays some part in the etiology. 3. Improve the general health. It is to the weakly that such cavings come, and the strong readily throw them off. 4. If possible, change the child's surroundings and take his mind up with new things, and let him be kept busy and happy. 5. The small amount of dirt eaten by children will do little harm of itself, but the great danger is that they will ingest semething poisonous or some parasite which, once entering the stomach will reverse the operation by preying upon the patient.

Diagnosis and Indications for Treatment of Intra-Abdominal Injuries Without External Evidence of Violence.—Dr. John B. Deaver says: In severe intra-abdominal injuries there are a few symptoms common to all, and in the majority of cases warrant immediate operation. Most prominent of these is pain accompanied by shock. The pain is not like that of ordinary intra-abdominal affections, but is accompanied by consciousness of impending death. When vomiting is associated with agonizing pain and tympanites is also present, indications point to intestinal or vesical rupture. Collapse with evidences of rapid exsanguination point to hemorrhage from rupture of one of the larger vessels, liver or spleen. There is often a characteristic rigidity of the abdominal walls, due to intra-abdominal irritation. It is sometimes so pronounced as to call to mind the checker-board appearance of the normal abdominal wall as represented in sketches by artists of former times. This condition of the walls is invariably associated with some form of serious lesion. In injuries of the abdomen in the female, pregnancy normal or extra-uterine, ovarian tumors, pyosalpinx, etc., must be borne in mind. Rupture of any of the solid viscera is usually followed by fatal hemorrhage.

The symptoms of rupture of the liver are usually great lividity of the skin, marked embarrassment of respiration, distention of the abdomen which is not altogether tympanitic, itchiness of the skin, and, if the patient survives the immediate effects of the injury, jaundice. Rupture of the gall-bladder or biliary ducts may occur as the result of blows upon the abdomen, especially if the gall-bladder be filled with gall-stones. The commonest seat of rupture of the biliary organs is the cystic duct. Peritonitis follows rupture of the gall-bladder or ducts. If the tear be small and the leakage slow, the escaping bile may become encysted and the peritonitis remain localized. If rapid, there will be general peritonitis and death. If there be no rapid extravasation, there will be collapse, vomiting and dyspnea and abdominal pain. If the bile escapes into the general peritoneal cavity, there will be prompt general acute peritonitis, with intense jaundice and clay-colored stools. When the gall-bladder has been ruptured death almost invariably follows.

The treatment of laceration of the liver, gall-bladder, hepatic, cystic, or common duct resolves itself into prompt surgical interference.

If a tear of the liver be superficial, by early operative interference we are enabled to remove the blood and bile which

have escaped into the peritoneal cavity, to surround the rent with strips of gauze with a twofold object: 1, to prevent a second invasion of the peritoneal cavity by blood or bile; and 2, to invite adhesions between the liver and parietal peritoneum. The hemorrhage can be controlled by searing the torn surfaces with the actual or thermal cautery or packing with gauze strips. When the tear in the liver is of such a character as to permit of suture, the latter, which should include the capsule, should be used. If there is doubt as to the thorough control of the hemorrhage by the sutures, the wound should be treated by the open method, gauze strips being placed between the liver and the parietal peritoneum to the outer side of the line of suture. When the gall-bladder, the hepatic, cystic, or common duct has been torn alone or in connection with injury to the liver, it may be necessary to establish a biliary fistula; however, the attempt, if possible, to suture the bladder or duct should be made.

Injury to the splenic artery or vein is invariably followed by sudden death. The symptoms of ruptured spleen are those of exsanguination, precordial pain, gasping and shortness of breath (air-hunger), weak, rapid pulse, vomiting and thirst. When the spleen has been the seat of the injury under consideration its removal should follow.

Rupture of the kidney varies in intensity and location. Laceration of the pelvis or ureter is not immediately fatal as hemorrhage is not profuse. The inflammation following obliterates the duct, consequently there will be developed in a few days a hydronephrosis, with a corresponding tumor of the loin. The kidney will sometimes become a multilocular abscess after long periods of time when the impervious ureter atrophies. Collapse invariably follows severe injury of the kidney and is accompanied by pain in the lumbar or hypochondriac region, vomiting and an anxious countenance.

If there is a history of severe injury to the abdomen or loin, followed by faintness, anxious countenance, coldness, vomiting and severe abdominal pain; if the urine contain blood in quantities, either clotted or mixed, immediately or within a day or so after the accident; if in several days pus appear as well as blood; if there is a rigidity of the lumbar or abdominal muscles and ureteral pain with retraction of the testicle; and if these symptoms are followed by enlargement of the lumbar and hypochondriac regions, with percussion dullness, we may be fairly sure that extensive renal laceration has occurred. Rupture of the ureter is extremely rare; in a few cases reported, the tear was so close to the hilus of the kidney that practically they may be considered as rupture of the kidney itself. The symptoms are the same and the treatment identical.

There are many symptoms common to both gastric and intestinal rupture and can be described together. The immediate symptoms are faintness, collapse, agonizing pain, either localized or general, weak, rapid pulse, thirst, vomiting, tympanites, and rigidity of the abdominal walls accompanied by extreme tenderness. The facial expression is indicative of the serious nature of the intra-abdominal lesion. We should never wait for secondary symptoms if the patient's condition warrants operative interference. Where operation has not been resorted to the above symptoms may redevelop at a later period in an insidious and unexpected manner, and the patient suddenly expire from either shock or general septic peritonitis due to intestinal perforation from pressure necrosis. Incomplete tears of the stomach do no produce sufficient symptoms to render their recognition possible. When the wound is in the immediate neighborhood of the pylorus, and particularly if it is longitudinal, it will be necessary to introduce the sutures in the line of the long axis of the stomach in order to avoid constriction of the orifice. The early recognition of rupture of the bladder is of paramount importance to a successful termination of a case. The introduction of a catheter will definitely settle the question of its rupture. If no urine escapes, but instead a few drops or a considerable quantity of blood, the inference should be that the organ has been torn. Before the catheter is withdrawn a measured quantity of boric acid or normal saline solution should be injected, when if the full amount thrown in is not recovered there can be no question of the nature of the injury. If the tear be intraperitoneal more liquid than that thrown in may be recovered or perhaps less. Where the tear is so small as to prevent the free escape of the injected fluid or where the opening in the bladder is valve-like, occasioned by a loop of intestine becoming herniated through it, this means of diagnosis may fail. In either event the prevesical space should be immediately opened, when it can be decided whether an extra- or intraperitoneal rupture exists. When the rent in the bladder is extraperitoneal, it is necessary to drain the prevesical space by a drainage-tube carried through the abdominal incision; if the urine has found its way along the sides of the pelvis, drainage should be introduced laterally through an incision above and to the outer side of the middle of Poupart's ligament. The bladder is also to be opened by a lateral incision through the perineum. The diagnosis of injury to the vascular system is unsatisfactory at best, as the injury to the vessel may be complicated by an injury to the abdominal viscera, entirely overshadowing the blood vessel lesion. The prognosis is grave under all circumstances, even when there has been only a contusion; there is the possibility of future aneurysm from weakened vessel wall, the result of the trauma.—*University Med. Mag.*, July.

Malarial Parasitic Infection Diffused by Air-Currents as Well as by Water.—Dr. P. Manson has given in the London *Lancet*, a clear and concise statement of his views regarding the spread of malarial fevers, inclusive of his original theory that the mosquito is the intermediate host of plasmodium or malaria, with many observed facts and his conjectures dovetailing in with those facts, in order to complete the parasitic cycle. "It can not be doubted," he says, "that there are many cogent reasons for believing that the plasmodium malariæ on leaving man, and as a normal step in its life history, becomes parasitic in the mosquito, and that in this insect it enters some cell—as any gregarine or coccidium would do—and probably develops into its reproductive sporulating form just as it does in the blood corpuscles of man. What then? How can its spores get out of the mosquito so as to increase and multiply and preserve its species from extinction when, in the course of nature, the mosquito dies? How, too, does it spread over the land and how does it get back to man again? Before attempting to answer these questions, I must first describe very briefly a passage in the life of the mosquito. The female mosquito, after she has filled herself with blood—the male insect is not a blood-sucker—seeks out some dark and sheltered spot near stagnant water. At the end of about six days she quits her shelter and, alighting on the surface of the water deposits her eggs thereon. She then dies and as a rule falls into the water beside her eggs. The eggs float about for a time and then in due course each gives birth to a tiny swimming larva; these larvæ, in virtue of a voracious appetite, grow apace, casting their skins several times to admit of growth. Later they pass into the nymphal stage during which, after a time, they float on the surface of the water. Finally, the shell of the nympha cracks along its dorsal surface and a young mosquito emerges. Standing, as on a raft, on the empty pelt the young mosquito floats on the surface of the water while its wings are drying and acquiring rigidity. When this is complete it flies away. The young mosquito larvæ to satisfy their prodigious appetites devour everything eatable they come across, and one of the first things they eat, if they get the chance, is the dead body of their parent, now soft and sodden from decomposition and long immersion. They even devour their own cast-off skins. In examining mosquito larvæ one often comes across

specimens whose alimentary canals are stuffed with scales, fragments of limbs, and other remains of the parental insect. As we have seen that the mosquito larva devours its own and its neighbor's exuviæ, we can readily understand how, once gregarines have been introduced into a pool of water, the larval mosquitoes in that particular pool become infected by the parasite. But as the mature mosquito, when she quits her nympha husk, also contains numerous gregarines we can also understand how she, too, carries the infection with her, scattering it about the country in her feces or conveying it to any other pool where she may lay her eggs and afterward die. Her body is then devoured by her progeny, or by any other mosquito larvæ that already chance to be in the pool. Along with her body the larvæ swallow any gregarine germs it may contain, if they have not already been picked up by the larvæ when feeding on the mud at the bottom of the pool. Does not this little story of the gregarine indicate the way, or a way, in which that other mosquito sporozoon, the plasmodium malariæ, multiplies? Does it not indicate how this parasite, in which man is so much interested, passes from mosquito to larvæ, from larvæ to mosquito in never-ending series? Does it not indicate how the plasmodium disease of mosquitoes spreads from pool to pool and is scattered broadcast about the country, and does it not indicate how it may get back to man again? We can readily understand how the mosquito-bred plasmodium may be swallowed by a man in water, as so many disease germs are, and we can readily understand how it may be inhaled in dust. Mosquito-haunted pools dry up. The plasmodium in the larvæ and those that have been scattered about in the water finding themselves stranded by the drought and so placed in a condition unfavorable to development, pass into a resting stage, just as they do, when by quinin or other means, man is rendered temporarily unsuited for their active life. The dried specimen of the pool, blown about by the winds and currents of air, is inhaled by man, and so the plasmodium finds its way back again to the host from whom its ancestors had, perhaps, started generations back. I would conjecture that on entering man and on entering the larval mosquito it develops into a flagellated spore similar to the flagellated spore into which it develops in the mosquito's stomach. In this way it would be enabled to penetrate the mucous surfaces and get into the human blood-cell. Many mosquitoes die without getting to water; all male mosquitoes die without seeking water. They may die far from water, blown away, as we know mosquitoes are, by winds. The bodies of such mosquitoes fall in time on the soil and decompose. The parasites they contain pass into the resting stage, and in this form they also may be carried into the air by currents, or be blown about as dust, or be shaken out by man when he disturbs the soil. In this way the plasmodium may find a route back to man again. In this way, too, we may explain the occurrence of those cases of malaria which apparently, though not really, are unconnected with swamp or stagnant water. Such is my view of the life history of the malaria parasite, and the rôle of the mosquito with regard to it, and the process by which man becomes infected."

Pyelophlebitis; Operation; Death.—The May *Scalpel* reports that Dr. Godlee has operated in two cases of hepatic abscess due to the above-named cause. A warehouseman, aged 41, had an acute illness in June, 1895, which left him with pain in the region of the liver, for which he was seen in September. He had a hectic temperature and one rigor. There was obvious swelling of the liver. The diagnosis lay between suppurating hydatid and abscess. The abdomen was opened on October 18 and a large abscess found at the front of the liver. A drainage tube was inserted. There was a slight improvement for a day or two, which was not maintained. Postmortem, there was old inflammation about the cecum, clotting of the right branch of the portal vein, and the corresponding part of the liver was riddled with abscesses. The left portal vein was patent, and the left lobe of the liver was free from suppuration. The patient had also purulent meningitis. Remarks were made on the pathology and treatment of this condition. A somewhat similar (fatal) case, a previously healthy Scotch manufacturer, aged 58. Disease began insidiously a month before he came under notice; there was very rapid enlargement of the liver accompanied by rigors. An abscess was found upon the under side of the liver, containing about one pint and a half of stinking pus. The patient was very feeble before the operation and died of shock. Mr. Arbuthnot Lane recalled the case of a patient who had suffered from attacks of what at first appeared to be biliary colic, but the distension of the gall bladder was associated with tenderness over that region and her temperature rose to 103 degrees F. He made out the presence of stones in the gall bladder, and cut down and removed them. It was adherent to a large intestine. He left a tube in, though he made no attempt to see whether there was anything in the transverse fissure, owing to the numerous adhesions. Moreover, there was no jaundice. He saw her a morning or two after the operation just after an attack of the old pain had come on. Her temperature was then normal, but it rapidly ran up to 107 F., and she died seven hours later. Postmortem they found an abscess behind the portal vein, and the liver was filled with large hemorrhagic patches. Although no opening into the vein could be made out it seemed absolutely certain that the abscess had burst directly into it or one of its branches.

PRACTICAL NOTES.

Massage in Treatment of Post-operative Intestinal Obstruction.—A Ernest Gallant, M.D., says that by early massage we can give immediate relief, independent of the use of laxatives or enemata, and that in these cases the bowels move more readily and with less stimulation than when massage is delayed. Laxatives tend to increase gas formation and intensify peristalsis, thus adding to the pain and discomfort. Enemata can not reach above the ileo-cecal valve, and cause colitis, rectal tenesmus and proctitis, followed by exhaustive diarrhea. Intestinal cramps from gas or too active cathartics may be relieved by repeating the rubbing at frequent intervals. Infection of the line of wound union or damage to structures involved in the operation by massage thirty hours after operation is not likely to occur.—*Mathews Med. Quarterly.* July.

Identification of Morphin in Toxicologic Cases.—J. B. Nagelvoort reports results of experiments to determine the stability of morphin under certain conditions. A practical test seemed to be needed to determine how small a quantity of morphin could be isolated and identified; the sensitiveness of morphin to different reagents being well known, $\frac{1}{8}$ grain was taken. This was dissolved in a plate of soup, selected to imitate volume and contents of a human stomach in natural condition. The next step was to mix 0.050 gram morphin with a suitable portion of refuse meat, fat and some bulk of vegetable matter. Ten mixtures of this kind were left to putrefy for fifty days, in a warm room, covered with a glass jar. Three mixtures of the same quantity of morphin with human flesh, furnished by the medical school, were also left to putrefy. At the end of the fifty days' exposure morphin was searched for in all the mixtures by the methods of Dragendorff, Stas-Otto and Graham (the dialysation process), due precautions being taken against confusion in the chemic reactions. Characteristic morphin reaction was obtained in each case. No better conclusion can be drawn than that a popular belief in the destructive power for alkaloids, of the decomposition of cadavers, has no foundation in the facts.—*Am. Jour. of Pharmacy*, July.

Infantile Scurvy.—Lack of fresh food is the most important cause of infantile scurvy, the use of the proprietary foods and condensed milk produces more than all other causes combined. Even fresh milk in small proportions is not sufficient to insure protection. It has been shown more recently that proprietary foods, condensed milk, and cow's milk too freely diluted are not the only offenders, but that sterilization or prolonged boiling of new milk of good quality is sometimes an important factor in the development of infantile scurvy. The diagnosis of this disease is a matter of some moment, the more so since the failure to institute treatment early is often followed by fatal results. The diseases for which it is most apt to be mistaken are rickets, rheumatism, stomatitis, congenital syphilis, infantile paralysis, osteitis and sarcoma. As a rule, however, symptoms of scurvy are so pronounced that there is but little difficulty in making a diagnosis when the condition is borne in mind. On the treatment of the disease there is but one opinion, and that is that the best results are secured by the prompt substitution of "living food," such as fresh milk, fresh beef-juice, and orange-juice for proprietary food, condensed milk and sterilized milk.—*University Med. Mag.*, July.

The Lewaschew Method of Substituting the Effusion in Pleurisy with Equal Amount of Salt Solution.—This method was first announced at the Berlin International Congress, but further success with it impels L. to recommend it in still stronger terms, as he has now a record of fifty-two cases, all followed by marked relief and prompt recovery. Thoracocentesis is first performed and as the effusion is gradually aspirated, it is replaced by physiologic salt solution, which prevents the collapse of the organs into the empty pleura, while the solution is gradually absorbed and exerts a general tonic and local antiseptic effect. The *Therap. Woch.* for June 28 devotes ten pages to a complete *résumé* of the results and technique of this treatment.

Diabetes in Early Infancy.—W. B. Bell, in the *Edinburgh Med. Journal*, reports the following case: A. B., aged 3 months 5 days; parents noticed that the child was very restless, suffered from a very intense thirst, and required a large quantity of fluid in addition to the breast. They also noticed some increase in the amount of urine, and that there was a good deal of cutaneous irritation around the genitalia and thighs. Occasionally the child was very drowsy, and his breath had a peculiar odor. The child was born as a face presentation and the labor was protracted and difficult, but not instrumental. Parents both alive and healthy; one sister healthy; one aunt on the father's side, died from diabetes mellitus. The patient is a well-nourished male child. Urine in excess, but amount not estimated or specific gravity ascertained. Clear and with a sweet taste, containing a large amount of sugar by Fehling's, Moore's and Johnson's tests. Marked weeping eczema of the privates and thighs, especially in the folds. Patient fretful and restless. Breath normal, excessive thirst, bowels regular.

Head-Swaying in Children.—Dr. William Osler, in the *Montreal Medical Journal*, June, has the following case to report of a neurotic affection that is well-nigh unique. He says: "Among the curious coördinate movements in children, head-nodding and head-banging are among the most interesting. The following case presents an interesting condition, which I do not remember to have seen described, in which the head is swayed from side to side in a rhythmic manner: E. C., female, aged 5, third child; always healthy; when born was not a blue baby and instruments were not used. Developed naturally and had no trouble with teething. Both mental and bodily growth were normal and she is now a well-nourished, healthy-looking child, very bright and intelligent. She is a Hebrew, and many members of the family are excitable and nervous. The parents are bright, intelligent people. From the time the child sat up it was noticed that she moved the head from side to side, or dropped it on the shoulder and this habit has persisted. The father states that it was noticed from the very earliest infancy. She never has had any other movements; never any rotation of the head, or head-nodding, or any twitching of the muscles of the face or of the arms. She is not a mouth-breather and she sleeps quietly. At times, however, she is very restless and gets on her hands and knees in her sleep and bores her head into the pillows and climbs up until she knocks her head against the foot of the bed, as her father says, 'rooting about like a pig.' She never has had spasms, and has been a very healthy child in every respect."

Dolphin Oil in Acne.—Dr. Boeck, in *Annales de Determatologie*, says that dolphin oil inhibits the growth of bacteria in the skin, and consequently he finds the following useful: Camphorae 0.30, acidi salicylici 0.50, sulphuris precipitati 10, zinci oxidi 2, saponis 1, olei delphini 12. Misce. Make the application each night; wash the face in the morning with soap and warm water.

Local Treatment of Diphtheria with Sodium Hyposulphite.—Dr. Henry A. Wickers writes to *Lancet*, for June 3, that in his opinion, the above named treatment has been too much neglected by his medical confrères. He has for some time been using a solution of sodium hyposulphite as a local application in diphtheria and has been well satisfied with the results, three or four applications having generally been sufficient to clear away the false membrane. The solution is prepared for use by mixing equal parts of pure glycerin and a saturated solution of hyposulphite of sodium in water, and is applied with a brush to the exudation and inflamed fauces once or twice daily or as often as may be deemed necessary. The glycerin by its adhesiveness keeps the solution longer in contact, and also, by its well-known local action, helps to relieve that engorgement of the mucous membrane which seems especially favorable to the growth of exudation. It is probable that the hyposulphite has a continuing action as a germicide in the following manner: Chemic decomposition is first set up by contact with the acid secretions of the mouth and throat, sulphur and sulphurous acid in a nascent state being set free; the latter being gradually converted by oxidation into sulphuric acid, would in the same manner decompose further portions of unchanged hyposulphite, and so on until the hyposulphite was exhausted. This local treatment will not interfere with the general treatment, which must be adapted to the necessities of each individual case.

Lactation Atrophy of the Uterus.—Dr. Hiram N. Vineburg says: "Whether or not puerperal hyper-involution apart from lactation frequently occurs must be left to future investigation. To its non-occurrence may be attributed many of the gynecologic cases seen in private practice. By examinations up to the twelfth puerperal week the condition can be recognized, if existing, and the ill consequences of deficient involution averted. Care should be taken that the hyper-involution does not become permanent." He summarizes his observations as follows:

1. Modern researches tend to prove that post-puerperal involution consists chiefly in a retraction and contraction of the individual muscle-fibers whereby the whole uterus is reduced in size.
2. When involution goes on to its full completion the uterus is reduced to a size smaller than that of the non-parous organ.
3. This condition of complete involution is known as post-puerperal hyper-involution. It is principally seen in nursing-women, and from this circumstance has received the cognomen of *lactation-atrophy*.
4. The so-called lactation-atrophy is a normal and desirable condition. It is temporary in its duration; but very rarely, under unfavorable circumstances, may become permanent.
5. When the parturient is unable to perform the function of lactation it is the duty of the physician to endeavor to bring about hyper-involution by other means at his disposal. An observance of this course will prevent many a woman from developing a host of gynecologic affections which frequently result from imperfect involution.—*Am. Jour. Med. Sciences*, July, 1896.

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INFORMATION WANTED.

It would greatly facilitate the prompt delivery of the JOURNAL to those members of the ASSOCIATION living in large cities, if they would kindly furnish this office with their street address in those cases where it is omitted from the wrapper of their JOURNAL, as we have been notified by the postmasters of the larger cities that second-class mail matter not having street address, would be placed in the general delivery to await call.

SATURDAY, JULY 25, 1896.

THE JOURNAL ITSELF.

Owing to the increase in the number of pages of the JOURNAL and the larger issue, we are obliged to go to press earlier than heretofore. We therefore request correspondents to send their communications so as to reach us not later than Tuesday instead of Wednesday as heretofore. We herewith append the detailed statement of the circulation for the last six months:

Jan.—1st week. . .	6,500	April—3d week . .	6,800
" 2d " . .	6,700	" 4th " . .	6,900
" 3d " . .	6,800	May—1st week . .	7,000
" 4th " . .	6,800	" 2d " . .	8,000
Feb.—1st week. . .	7,000	" 3d " . .	8,000
" 2d " . .	7,000	" 4th " . .	7,200
" 3d " . .	7,000	" 5th " . .	7,100
" 4th " . .	7,200	June—1st week . .	7,000
" 5th " . .	7,200	" 2d " . .	7,100
Mar.—1st week . .	8,100	" 3d " . .	7,100
" 2d " . .	8,000	" 4th " . .	7,200
" 3d " . .	7,900		
" 4th " . .	8,100	Total	188,300
April—1st week . .	7,800	Weekly average for six months,	7,242 4-13
" 2d " . .	6,800		

Our members should be reminded that the Treasurer, HENRY P. NEWMAN, M.D., Venetian Building, Chicago, is ready to receive the annual dues; and to those not present at the Atlanta meeting, who have not already responded to the Treasurer's call, we wish to remind them that their great weekly costs vastly more money than it did a few years ago, and that prompt payment of dues and subscriptions are more than ever necessary. Let every member help us obtain a new member, and we can celebrate the semi-centennial at Philadelphia with one of the strongest medical organizations in the world.

THE ANNUAL REPORT OF THE SANITARY COMMISSIONER WITH THE GOVERNMENT OF INDIA.

We have read this document with more than ordinary interest and pleasure, for it shows how keenly alive the British Government of India have become to its sanitary interests.

The report deals not only with the sanitary situation in India, but gives the returns of sickness and mortality among the European and native troops and prisoners in India for the year 1894. With the last we can have only a passing interest, but with the progress of sanitation in India, the whole world is interested. We have been included among those who have frequently animadverted on the indifference and neglect of the ruling power in that empire. We have urged that any nation was responsible for maintaining endemic cholera and yellow fever centers within its jurisdiction. We have set forth this sin of omission as an infringement of the *jus gentium*, that should be recognized in international law. The specific examples, the bad object lessons, were Spain in its failure to arrest yellow fever in Cuba, and Great Britain in its failure to stamp out cholera in India. The world has suffered untold misery from these preventable diseases, and the nations responsible for their maintenance have been apathetic. Spain is now suffering the loss of the flower of her army. Regiment after regiment sent to Cuba becomes decimated and leaves most of its gallant membership in eternal sleep. The *febre amarilla*, rather than the bullets of the patriots, plays havoc with Castilian and Aragonian alike. The expenditure of a few millions in carrying out sanitary measures would make Cuba one of the most healthful spots on the globe. Spain has deliberately shut her eyes to this fact, and allowed the island to become a land of death to all comers. If that were all! This insanitary apathy has cost this and other countries thousands of lives, and incalculable loss to commerce both by sea and land. If Spain shall lose Cuba at this time, every civilized country will rejoice, because, with other and different government, "yellow Jack" will cease to prey upon the world's commerce from Cuban ports.

English rule in India should be welcomed by the world, so far as advances in civilization are concerned, but up to a very recent period, it is questionable whether, in view of her neglect to carry out sanitation, the world would not be much better off with Russia in full control. Russia knows how to stamp out cholera and plague within her dominions, and she not only has the power to enforce sanitary regulations where necessary, but never yet has failed to exercise it.

Such being the general views held by hygienists in

this country, it is a great pleasure to take up the report of the Commissioner and see that great work is now being done throughout the Empire.

The water supply is being looked into, and it seems at last likely that renewed energy will be shown in the next succeeding reports. The enormous mortality from cholera throughout India and Burma is stated by the Commissioner (Surgeon-Major General CLEGHORNE), page 168, to be 529,049 as against 218,113 in 1893 and 762,695 in 1892.

What may be done in the matter of prevention of cholera by proper management is well shown by the result of the precautionary measures taken in the Northwestern provinces. We quote from the report:

"Turning now to the *Magh Kumbh* of 1894. In view of the large assemblage expected, special arrangements were made as soon as the site for the fair could be definitely fixed. This, owing to the direction of the main stream of the Ganges after the heavy rains in the hills in October, 1893, could not be done until late in December. It was decided to lay out the main site of the fair on the Cantonment land on the right bank of the river, between it and the Beni embankment, which runs north from the fort to the village of Daraganj. It was arranged that the religious brotherhoods or *akharas* should be encamped on an island in the bed of the river near the left bank, their encampment being connected with the main site, on the other side of the Ganges, by a bridge of boats. The general site, on alluvial land, immediately north of the fort, comprised a broad street of shops, and to the north of this again, an extensive camp, with broad thoroughfares and lanes which left the main roads at right angles. On the island a broad road running eastward from the bridge of boats divided the camp in two. At the general site the municipal water was laid on, the numerous standposts, each surrounded by a platform of flagstones, being situated at a convenient distance from each other. All wells were closed and fenced in, so that no one could use water from them. It was not practicable to supply the municipal water to the camp on the island, but arrangements were made for a supply from the main stream of the Ganges, access to the back waters being prevented by a cordon of police. Conservancy was thoroughly carried out. At the general site, dry earth latrines were used, solids and liquids being collected in separate vessels and conveyed to a distant trenching ground by means of a light tramway. On the island there were trench latrines, round which were placed police cordons. Ample urinal accommodation was provided. Rubbish and sweepings were removed in carts, except when the accumulations were very large, when they were burned at convenient places. Provision was made for the prompt removal of the sick to hospital for treatment. For police, sanitary and medical purposes, the general site was divided into five areas and the encampment on the island into two, and arrangements were made for continual patrolling by day and night. The Deputy Sanitary Commissioner was placed in executive charge."

The result was that out of the vast multitude comprising more than one million five hundred thousand persons assembled on February 5, only 185 died from January 9 to February 20. Of these deaths 47 were due to fever, 59 to dysentery and diarrhea and only 3 deaths to cholera.

There is no longer any doubt that with the steady improvement of the water supply and the prevention of pollution of the supply, cholera may be eradicated from India as thoroughly as from England itself.

The report on inoculation by HAFFKINE, which was submitted to the government August 25, 1895, is printed in full, with a rather noncommittal comment (see p. 269). Altogether the report shows wonderful sanitary progress.

HEMATOZOA IN THE LOWER ANIMALS.

The recent discovery by SURGEON-CAPTAIN BRUCE of the Indian army that the tsetse fly of Africa acts as the carrier of living virus is of interest from a double standpoint: First, to the student of human and comparative pathology, in clearing up the origin of a mysterious disease; and, second, as furnishing another instance of an insect carrier of contagion. For the last fifty years, from the time of LIVINGSTONE, successive travelers have regaled us with accounts of the ravages of this fly. We learn that it is a terrible scourge to live stock and that it is one of the greatest obstacles to colonization in the central part of the "dark continent." The tsetse fly (*Glossina morsitans*) is slightly larger than the common house fly; it has a slender proboscis, nearly twice as long as its head, and is able to puncture with great force. Its bite is fatal to the ox, horse, ass, sheep, dog, and elephant; the goat, buffalo, antelope, zebra and man himself are not seriously affected by it. In fatal cases, after an incubation of short duration, the animals have fever, followed by marked anemia, marasmus and dropsy for several weeks or even months.

The geographic distribution of the insect is extensive, though rather erratic. It is found in localities here and there over Central Africa from the Transvaal to the Zambesi, on the right bank of the latter, and from Zanzibar as far inland as Ugogo. In these situations it is to be found in low-lying localities, the borders of marshes and water holes, and in beds of reeds. The fly makes a loud buzzing noise which is said to cause more terror among domestic animals than the lion's roar. Horses which have passed unscathed through the fly country and become immune are called "salted," in South African parlance, and command extraordinary prices.

Up to the time of BRUCE'S discovery the nature of its virus was unknown. LIVIGSTONE, who was one of the first to give an accurate description of the insect, attributed it to the glandular secretions; other observers to germs of some description. MÉGNIN was of the opinion that the fly carried anthrax virus from one animal to another. BRUCE has discovered that the fly itself has nothing to do with the disease save as the carrier of a living virus from infected to healthy

animals. This virus is a flagellated infusorian, apparently identical with the *Trypanosoma Evansi*, which was the cause of a similar disease among the live stock in India. Some ten years ago RAILLIET had nearly solved the problem, for he wrote: "In reality the tsetse can merely be regarded as a carrier of virus and its bite is only dangerous when its proboscis has been previously infected. With regard to the virus that it habitually inoculates, it is difficult in the present state of our knowledge to say what it actually is," etc.

Horses, mules and camels in India are attacked by a pernicious anemia to which the name "surra" disease has been given. The disease, which is invariably fatal, is characterized by fever, rapid emaciation, extreme debility and death, in marasmus and coma, occurs in from ten to sixty days. The mortality from the disease in India and Burmah[1] is enormous. Blood drawn during life has an increase in the number of white cells with a diminishing number of the red; the latter are mostly crenated. In the midst of the corpuscles is seen an organism with a long, flexible tail. EVANS, who first discovered it, supposed it was a *spirillum*; CROOKSHANK, after a minute examination, recognized it as a flagellate infusorian, and BALBIANI gave it the name of *Trypanosoma Evansi*. A similar flagellate organism is found in the blood of rats and hamsters in England and on the continent of Europe. According to LINGARD the Indian *trypanosoma* is innocuous to Indian rats, in the blood of which it is found. The disease is inoculable. Dogs and monkeys have been successfully inoculated; rabbits are very susceptible, though the disease is not so fatal in them. Dogs appear to be spontaneously affected and die. (FLEMING.)

The question arises, is there any relation between these three forms? This might be partly settled if experiments with the European *trypanosoma* showed it to be pathologic for horses. However, while the Indian form is only feebly pathologic to the ox, the African form is deadly. A writer in the *British Medical Journal*[2] suggests that "the European, Indian and African trypanosomes, although closely resembling each other morphologically and biologically, yet differ in their pathologic properties, the trypanosome of Europe being innocuous in the case of all animals, the trypanosome of India, if deadly to certain domesticated animals, being almost innocuous to the ox of that country, while the African trypanosome is deadly to nearly all four-footed domestic animals, the ox included. Seemingly, the pathologic qualities of the three varieties are graded, as it were, by climate or by breed or by other circumstances. A similar peculiarity has long been known to exist in connection with the bacillus of anthrax, which, though fatal to the sheep of Europe, does not affect the Algerian sheep."

[1] Nour. Dict. Prat. de Méd. Chir. et Hyg. Vétérin, xii, Paris, 1885.
[2] May 16, 1896.

It seems that the hematozoa in the lower animals play fully as important roles as we know their congeners do in man.

WATER SUPPLIES.

We seldom notice a new book editorially, but we have at present before us one which fills a long felt want: WM. P. MASON'S "Water Supply, Chemical and Sanitary," as announced by the gold lettering on its handsome red cover, but "principally from a sanitary standpoint," according to the title page. Our health officers and sanitary men have been waiting for several years for a book of this kind. If W. RIPLEY NICHOLS had lived they would have had it several years ago, for he gave them its nucleus in his article on "Drinking Water and Public Water Supplies" in 1879, in the first volume of Buck's "Hygiene," and this nucleus, but for his untimely death, would have expanded *pari passu* with the extension of his experience. DR. SMART of the Army published excellent directions for sanitary water analysis in the Reports of the National Board of Health, and in the same volumes the account of MALLET'S investigation into the value of the processes of water analysis presents a fund of information concerning the analytical results given by waters of known quality. DR. SMART'S article on water in Wood's Reference Handbook of the Medical Sciences was also of value. DR. FLOYD DAVIS of Des Moines, Iowa, and DR. LEFFMANN of Philadelphia, gave us excellent little books on the sanitary analysis of water and Professor MASON himself contributed a booklet, known to but few because it was printed mainly for the laboratory use of his students, and yet from the precision of its directions it was worthy of a more extended publication. Nor must we forget the valuable work of the State Board of Health of Massachusetts on filtration, published in recent annual reports, nor the many special reports on the water supply of particular municipalities by health officers and special committees. In England we have had new editions of WANKLYN'S book condemning waters on the ammonia and albuminoid ammonia distilled from them; of FRANKLAND'S condemning them on the absolute quantities of the organic elements; the relation between the carbon and nitrogen and the skeleton of sewage as represented by the nitrates in solution in the water; articles by TIDY on the oxygen required to oxidize organic matter and by EKIN on the dangerous character of waters containing more than so many milligrams of nitrates per million of the water, and so on. But all these publications, with the exception of NICHOLS' article, dealt merely with the laboratory work of analysis and the more difficult work of translating the results of the analysis into an opinion on wholesomeness or unwholesomeness that could be understood by the laity. These authors took the water supply into the laboratory and told us all

about it from the laboratory point of view, so that we came to know this quite well; but what we did not know, yet wanted to know, what we could not find out from chemic and medical books, was how the water supply came to be a water supply. In Washington we knew all about the dam and the conduit, the reservoir and distributing mains, and in Chicago about the tunnels, but about the methods of water supply and its purification in other cities we were ignorant, because the publications mentioned gave us nothing from the engineering and financial points of view. Fortunately Professor MASON went to Europe and enlarged his experience, not only of laboratory methods, but of methods of purification on the wholesale scale for municipal supplies. As a result of his European trip and his earnest desire to promote purity of water supplies for home consumption, his small but valuable laboratory brochure has blossomed into what may without flattery be called the best work on water supplies in the English language. The author is modest; he speaks of his work as a compilation, which he hopes will prove of interest to several classes of men quite widely separated in tastes and occupations; to the physician, who wishes to keep in touch with this particular phase of sanitary science, but whose time does not permit of his undertaking such investigations personally; to the hydraulic engineer, whose professional duties prevent his sifting out from the mass of recent bacteriologic and chemic results such facts as bear upon his specialty; to the water analyst or the chemic student, who may seek to employ analytic methods widely used and largely based upon the report of the Committee of the American Association for Advancement of Science, and finally to the general reader, who as a water consumer feels a natural interest in the continually recurring water problem of the day.

Critics have on several occasions stated that medical men in discussing a professional subject are never satisfied unless they go back to HIPPOCRATES and drag it along through the ages to show their perfect familiarity with it. Professor MASON starts from HIPPOCRATES, but in his defense it is to be noted that he does place M.D. after his name and that although he does begin away back he does not fail to bring his subject up to date. He shows the connection between water supply and such diseases as malarial fever, typhoid fever and cholera, citing the instances on which the argument is based instead of dealing with vague assertions of the belief of certain medical men. He describes the filter bed system so common in Europe, so practically unknown here, not only from chemic, bacteriologic and sanitary points of view, but from the practical and financial. Rain, ice and snow water; river, stored and ground waters; dug, driven and deep wells, receive full consideration, and our knowledge of them is brought up to date. But it is needless to go over the whole subject. The volume will be of value to all those mentioned by the author in his preface as bringing to their notice matters that could be found heretofore only by hunting over the entire field of sanitary literature.

SECRET CURES OF INEBRIETY IN BELLEVUE HOSPITAL, NEW YORK.

The commissioners of charities in New York have considered it their duty to place two wards of Bellevue Hospital at the disposal of a physician who has a secret cure for inebriety. This physician is not a member of the hospital staff or board, and apparently proposes to prove to a skeptical public that his remedy is of such value that the authorities must adopt it at once. But literally he has secured a golden opportunity to pose before the public as a great deliverer and benefactor. The newspaper accounts from day to day of the treatment, and the interviews and statements of cured men, far exceed the wildest dreams of any gold-cure specifics in the past. The superintendent and the various reporters, together with some of the political managers, assume that it is wonderful. Even the mayor is impressed and convinced, and altogether it is the most startling exhibition of therapeutic wisdom and knowledge, outside the profession, seen for many years. Several weeks have past, and the cured cases are still posing in letters to the public as examples of this marvelous cure, which, strangely, is veiled in mystery. In the meantime the physician visits the wards three times a day, administers the drug and the reporters call regularly to write up the results in the dailies. The public write letters to the hospital authorities and physicians for information to the extent of hundreds daily. The next step will be the endorsement by some leading clergymen, and the sale of privileges to use it in other hospitals. This is said to be an experiment which the authorities feel justified in conducting, but where are the medical board and hospital staff? Are they considered incompetent for this work? Perhaps they are aware of the nature of the remedy and are willing the trial should be invested with mystery and quackish glamour; or perhaps they are powerless in opposition to the hospital authorities, and dare not protest for fear of losing their places. At all events their silence is strange and unaccountable, and the suspicion which gathers about such an effort should be dispelled by some authoritative statement of their position. If the lay authorities of a hospital arrange for and conduct therapeutic experiments outside of its medical board we shall expect a new era. The various specifics and empiric cures will seize this new method of advertising and utilize it to its greatest extent. The moribund gold-cure speculators awake and listen to the glowing accounts of this Bellevue experiment, and turn away with anguish that such an oppor-

tunity did not occur in their day. On the other hand the new armies of quack curers watch with breathless interest this pioneer effort to turn the wards of great charity hospitals into places for advertising their drugs. Two New York medical weeklies have protested against this movement, while a third journal, which is usually very outspoken, has preserved a dignified silence.

We shall follow with great interest this experiment and shall hope its results will come to us by other mediums than the daily press and the hysteric assertions of its so-called cured victims.

CORRESPONDENCE.

An Open Letter to the Members and Friends of the Medical Profession (Regular) in Michigan.

DETROIT, Mich., July 20, 1896.

An organization calling itself "The Michigan Medical Legislative League" has, in a printed circular, appealed to you and to me for aid and comfort in its efforts to accomplish a certain self-imposed task, namely: "To secure through organized effort just and equitable laws regulating the practice of medicine in Michigan and to promote the interests of the medical fraternity." Truly a noble object and worthy the utmost effort of every lover of science and friend of humanity. The Executive Board of the League consists of three irregulars and two members of the regular profession.

For almost a quarter of a century in this State, I and my professional associates have labored and waited and hoped for the accomplishment of this, which is plainly declared to be the main "object" of the "Legislative League." It is needless to say that its attainment is as dear to our hearts to-day as it ever was. We stand ready now as in times past to do anything and everything within the bounds of honor and decency to secure legal medical protection for the sick and suffering. It is therefore with extreme sorrow that we feel compelled to say that the course of procedure and policy publicly avowed by the "Legisiative League" is, in our opinion, deserving only the pity and contempt of every true friend of regular medicine and every individual who sincerely wishes to do what he can for the relief and protection of the sick and hurt. The plainly avowed ultimate "object" of the so-called league is the securing of an act of the legislature as follows:

A BILL to establish a Board of Registration and to regulate the practice of medicine, etc. Of this proposed bill Section 1 reads: "The people of the State of Michigan enact that the Governor shall appoint nine physicians, residents of the State, *not more than four of whom shall be regular*, two homeopathic, two eclectic, one physiomedical (whatever that may be) who shall constitute a Board of Registration in Medicine."

Section 3 reads: "All persons engaged in the practice of medicine and surgery in any of its branches and all who wish to begin the same in the State shall apply to this Board to be registered and for a certificate of such registration."

If this bill had originated with non-professional politicians, or with quacks and irregulars, the pitiful degree of recognition accorded the adherents of true science and the followers of every great and noble name in medicine and surgery from Hippocrates to Pasteur and Lister might have been dismissed with a smile of ridicule and contempt; but coming, as it appears to come, from men who still profess loyalty to honest scientific medicine, words fail us to adequately express our amazement and sense of humiliation. The regular profession of Michigan numerically exceed all other so-called schools or sects in the proportion of two to one. In the matter of talent, education, character and influence the difference is surely immensely greater. Can it then be possible that the representatives of the great profession of honest scientific medicine in this State are ready and willing to join forces with every quack and pathy and sect for the purpose of securing a law which in the most practical and unmistakable manner declares the inferiority of regular and the superiority of irregular medicine? Many years ago the profession of this State submitted to a severe rebuke at the hands of the AMERICAN MEDICAL ASSOCIATION for having even thought of a somewhat similar proposition. Can it be possible that at this late date the regular profession in Michigan feels itself so feeble and unable to maintain itself that it stands ready to defy the public professional sentiment of this and all other lands and in the hope of obtaining a little milk and water degree of protection (*for themselves rather than their patients*) enter into a combination and unholy alliance with its most insidious and meanest foes, and place the balance of power in the hands of the enemy?

The occasion is, in our opinion, critical. The honor and the good name of the profession in Michigan is at stake. It is not yet too late to rescue that good name and keep it safe from disgrace and misfortune. For myself and others who love and honor our profession, we earnestly implore the members to come forward at this time and openly approve the only attitude consistent with the honor and best interests of the profession. Let us earnestly and persistently oppose any and all legislation which tends to increase the power of the quack, the charlatan and the sectarian, and which at the same time degrades and humiliates the only real school of medicine, namely, that school which rises above all pathies and all sects and seeks only the welfare of the sick and suffering and in doing so eagerly accepts anything and everything which holds out reasonable hope of being practically useful. Let us as a profession demonstrate by our lives and our works our claims to legislative recognition and convince the people that *our* interests are *their* interests.

Legislation so earned and secured would be a glorious triumph for science and for humanity. Legislation obtained by compromise and abdication and unholy alliance with everything and every creature in the shape of a medical parasite only confers upon the latter undeserved honor, while it stamps the word *shame* upon the brow of each one of us in Michigan who claims to be, to the best of his ability, the representative and the exponent of the noblest of all professions.

Perfection can not be claimed for any man or set of men, and we have no choice but to confess to many failures and imperfections on the part of the regular profession in this State and everywhere else. Nevertheless the fact remains that our aims are avowedly higher and in practice our record incomparably grander than that of all the other so-called schools and sects combined.

Why, therefore, in the name of all that is true and good, should we condescend to join hands with any sect, school or pathy, thereby uplifting that which we condemn and despise and at the same time dishonoring that for which we have always been willing to do our utmost to protect and save?

DONALD MACLEAN, M.D.

Leprosy.

NEW YORK, June 23, 1896.

To the Editor:—I inclose a letter just received from Dr. Wm. Havelburg, the Director of the Bacteriologic Laboratory, Hospital dos Lazaros, Rio Janeiro, Brazil, which will be of interest to American dermatologists.

Yours truly, ALBERT S. ASHMEAD.

"Rio de Janeiro, May 26, 1896.

"Dear Dr. Ashmead:—I take for granted that you are conversant with the German language, in which I can express myself so much more easily. Accept my best thanks for your many different messages, either of a literary or other charac-

ter, and I beg you will excuse me for not having rendered my thanks to you before, as I have been prevented by very sad private occurrences.

"Your different publications have interested me very much. In regard to the modern way of doctors concerning serum-therapy, I am thoroughly skeptical. Perhaps diphtheria has, for some time been your field; in regard to leprosy, we hardly could talk of such, as long as the culture of the lepra-bacillus has not been made. Those experiments made in Colombia (with Carrasquilla serum) appear to be very naive. I neither believe in nor trust them.

"You mention a proposition made by Dr. Goldschmidt, regarding a leper congress. That gentleman is known to me by name and by many publications. Although I have not had the same experiences of therapeutics as those which Dr. Goldschmidt has published, I feel with regard to a congress that a real motive is wanting. The increasing danger of leprosy is well known. The Culture States, in their administrations take due regard of hygiene and protect themselves, and those States which do not do so, can or will not, and they do not understand the affair. Particular progress in our knowledge of leprosy and its treatment has, in the last years, not been made. Therefore, what are we going to do with a special congress? He who in this matter wants to talk about it, finds ample opportunity in the general congresses (Interior Medical Dermatologic Hygiene, or the International Congresses).

"I am just about undertaking a journey to Europe for study's sake, and intend to visit the leper hospital in Bergen. I would be highly interested to learn how much knowledge they have there in regard to lepra.

"While in this way answering some of the points of your letter, which has greatly interested me, I greet you and sign myself always your devoted friend, WM. HAVELBURG."

A Cure for Whooping Cough.

GAINESVILLE, FLA., July 16, 1896.

To the Editor:—In Keating's Cyclopedia of the Diseases of Children, the assertion is made that one-fourth of the infant mortality of London is caused from whooping cough, and from a study of the vital statistics as published in Public Health Reports issued by Supervising Surgeon-General Marine Hospital-Service I believe that the same ratio will hold good in many other cities. Having for a number of years used, with such happy results in this affection, a combination of old and approved remedies, I feel it to be my duty to publish the formula, feeling assured that almost any case can be cured in a week if the remedy be properly used. Where the doctor can not supervise the administration of the medicine and thinks it not advisable to push the drugs to their physiologic effects the length of time necessary for a cure may be longer than a week, but the distressing paroxysms and dangers to life will have been quickly overcome.

This is the formula as I usually write it:

℞. Tinct. belladonnæ . . . . . ℥iv to ℥vi
Phenacetin . . . . . ℥iiss
Spirits frumenti . . . . . ℥i
Fl. ext. castaneæ (chestnut leaves) . . . q. s. ad ℥vi
M. Sig.: Shake well.

Dose: From 10 drops for a one-year-old to teaspoonful for ten-year-old child, every two to six hours.

I am inclined to think that the substitution of atropiæ sulphate for the tinct. belladonnæ would be a more elegant prescription, but I have had such good results from the formula as written above that I have had no occasion to change it.

This remedy should be given every two hours or oftener until the flushed face or dilated pupils show that the physiologic effects of the belladonna has been obtained, then the dose can be lessened or the interval between doses lengthened, but the effects must not be allowed to die out until the paroxysms of cough have ceased which will usually be after a very few hours.

When one member of a family has developed the disease others who have been exposed can be prevented from developing any unpleasant symptoms by administering a few doses of the remedy.

R. A. LANCASTER, M.D.,
Ex-President Florida Medical Association.

Typhoid Secondary Infection.

WOODHULL, ILL., July 20, 1896.

To the Editor:—It was with considerable pleasure and satisfaction that I read the decision of the court of appeals of Colorado, Jones vs. Vroom, reported in our JOURNAL, July 18, page 169. The reason it is interesting to me is that I have a case pending, to come in the October term of court, where I have been sued for the loss of an eye from typhoid fever. My case was one of four cases that got their contagion in the same locality. Three different physicians treated the four cases. They were all extremely bad cases and they all died except this one case which lived, but has lost the sight of one eye from sloughing of the cornea. The case you reported appears to be very similar to mine, except the fact that they promised to provide a specialist and did not, while I simply did the best I could, never claiming to be a specialist. If you know of a record of any similar cases to the one you reported, or mine, and could advise me where to find the record, it might do me some good in my coming trial. My case is on the streets, fat and apparently well, but blind in one eye.

Respectfully, W. S. MCCLANAHAN, M.D.

The Business Committee.

CHICAGO, July 15, 1896.

To the Editor:—I wish to call the attention of the members of the ASSOCIATION to a recommendation made at the last meeting by the Business Committee. The recommendation was not presented to the ASSOCIATION until the last session and was then, through a misapprehension I am sure, laid on the table. The belief that those who voted to lay the resolution on the table, would have voted to adopt it had they understood its provisions; and the belief that it is much easier to consider a proposition of this kind between meetings, than it is in the hurry of a session is my excuse for presenting it now. The recommendation was as follows: (See JOURNAL May 16, 1896. Page 988).

"*Resolved*, That there be made an Executive Council of five, consisting of the three officers of the Executive Committee, and two members chosen by election. Of this Council of five, one must belong to the Section on Practice of Medicine and one to the Section on Surgery and Anatomy. To this Executive Council shall be delegated all the duties of the Executive Committee, during the intervals between its meetings."

The resolution is perhaps a little ambiguous, but the intention is very simple. It only gives permission to the Executive Committee to delegate their regular duties to a smaller committee of their own number, during the intervals between the meetings. It is impracticable for the whole committee to meet, but a sub-committee of five could meet and would be of great service in preparing for the annual meetings, and in attending to such matters as would naturally come before them. No new powers or duties are delegated to this committee. They only act upon such questions between the annual meetings as come under the jurisdiction of the Business or Executive Committee during those meetings. Those being questions that do not particularly belong to any other officer or committee, it would be a decided gain to have some one with proper authority to consider and act upon them at any and all times. The ambiguity in the resolution as presented from the Executive Committee is in the first sentence. Had that been something like this, the resolution would probably not have met with opposition:

"*Resolved*, That there be made an Executive Council of five, consisting of the three officers of the Executive Committee, and two other members of that committee to be elected by the Executive Committee from their own number." This certainly does not involve a change of the constitution. It scarcely involves the necessity of reference to the general session, as it is a simple delegation of powers by a large committee to a smaller committee of their own number.

Very truly yours,

HORACE M. STARKEY, M.D.

Drops His Membership.

ROCKFORD, IOWA, July 20, 1896.

To the Editor:—I have been a member since the New Orleans meeting in 1885, but now drop it to get membership in the Medical Society of the Mississippi Valley, whose meetings are usually more easily reached. Yours truly,

LUTHER BROWN, M.D.

Location of the Journal.

CHICAGO, ILL., July 13, 1896.

To the Editor:—In the JOURNAL of the 11th inst. a Chicago correspondent wishes to change his vote on the permanent location of the JOURNAL to Washington, D. C., and in stating his reasons, says: "Financially, as I notice from the advertising columns, the principal support of the JOURNAL comes from east of the Alleghenies, I do not see that the ASSOCIATION would be any worse off." Such a statement led me to examine the facts on which it should rest. Doubtless the advertisements in the JOURNAL vary more or less from week to week. In actually examining the advertisements in the JOURNAL containing the letter of your correspondent I found considerably more advertising space occupied from west of the Alleghenies than from the east. Then turning to the more important source of financial support, that from members and subscribers, I found the last complete list of paying members and subscribers was published in December, 1891. A fair count showed the total number of members and subscribers in the United States at that time to be 5,028. Of these only 1,967 were from east of the Alleghenies, allowing Alabama, Georgia and Florida to be included in that division; while 3,061 were from west of the mountain range. Indeed, the seven States usually called northwestern, viz., Ohio, Indiana, Illinois, Iowa, Minnesota, Michigan and Wisconsin furnish more members and subscribers than all the States east of the Alleghenies from Maine to Florida. And Illinois alone furnishes one-third more patronage to the JOURNAL than all the six States east of New York.

In regard to your correspondent's allusion to the proximity of the JOURNAL in Washington to the Library of the Surgeon-General's Office, the Army Medical Museum and the Smithsonian Institute, it is sufficient to say that the medical libraries and institutions in Chicago, with the ample list of exchanges and new publications coming to the JOURNAL's own office, afford a wider field for reference and study than its editorial corps can find time to cultivate. And his allusion to proximity to congress, and the influencing of congressional legislation, fairly raises the question whether it is more desirable to have the JOURNAL converted in a few years into an *organ of medical politics and specialism*, or to keep it as it is, the strictly professional organ of the great body of practitioners of medicine in the United States. Yours truly, N. S. DAVIS, M.D.

SAN JOSE, CAL., July 8, 1896.

To the Editor:—Permit me a word on the question of permanent location of the JOURNAL OF THE ASSOCIATION. This question has been submitted to the members of the ASSOCIATION, and each one should have been allowed to come to his own conclusion and cast his ballot in accordance therewith without any attempts at electioneering or log-rolling from any quarter. The editor has wisely abstained from any suggestions whatever. This is as it should be. But the silence has been broken by Dr. Newton of New Jersey. If electioneering is in order there may be a thousand members who would like to have a say. Shall we say it? If so extend the time of voting a month or two and keep everything else out of the JOURNAL and we will have a picnic. I move that there be no further electioneering allowed in this matter.

Yours truly, A. C. SIMONTON, M.D.

BOOK NOTICES.

A System of Medicine, by many writers. Edited by THOMAS CLIFFORD ALLBUTT, M.A., M.D., LL.D., F.R.C.P., F.R.S., F.L.S., F.S.A. Volume I. New York: Macmillan & Co., 66 Fifth Ave. London: Macmillan & Co., Ltd. 8o, cl. Price $5.00.

This is the beginning of an elaborate "system," which is destined to become a very important addition to our literature. The work is a pioneer in many directions, as will be seen by glancing at the synopsis of this volume.

The first division contains articles on: 1, Medical Statistics; 2, Anthropology and Medicine; 3, On Temperament; 4, On the Laws of Inheritance in Disease; 5, Medical Geography of Great Britain; 6, Inflammation; 7, The Doctrine of Fever; 8, General Pathology of Nutrition; 9, General Pathology of New Growths; 10, Principles of Drug Therapeutics; 11, Climate in Treatment of Disease; 12, Artificial Aerotherapeutics; 13, Balneology and Hydrotherapeutics; 14, Medical Applications of Electricity; 15, Massage: Technique, Physiology and Therapeutic Indications; 16, General Principles of Dietetics in Disease, or the Feeding of the Sick; 17, Diet and Therapeutics of Children; 18, Nursing; 19, Hygiene of Youth: 30, Life Assurance.

After these comes the second division, devoted to "Fevers," of which part I consists of 11 pages on sunstroke, and part II is on the infections. This is disposed of in sixteen separate articles as follows: 1, General Pathology of Infection; 2, Septicemia and Pyemia; 3, Erysipelas; 4, Infective Endocarditis; 5, Puerperal Septic Disease; 6, Furuncle, Carbuncle; 7, Epidemic Pneumonia; 8, Epidemic Cerebro-spinal Meningitis; 9, Influenza; 10, Diphtheria; 11, Diphtheria; 12, Tetanus; 13, Enteric Fever; 14, Cholera Asiatica; 15, Plague; 16, Relapsing or Famine Fever. The volume concludes with a very full index. The illustrations are excellent. No library will be complete without this work. In the treatment of diphtheria, Herringham views favorably the serum treatment, but it is only mentioned as a special treatment. His usual treatment in practice is set forth on p. 744, and is seen to consist of the usual topical and general remedies. Sulphoricinic acid receives a favorable mention, although we are instructed (p. 745) no drug is a specific, "and the indications for their use must be left to the judgment of the practitioner who is directing their use." The best way of giving chlorate of potash, he says, is by the old-fashioned chlorin mixture. A foot note states that chlorin vapor was recommended by J. Johnstone as early as 1779.

In enteric fever, Dreschfeld mentions the antiseptic treatment, calomel receiving the first notice. Of this drug he says, p. 852: "Of its antiseptic virtue there can be no doubt, and experimental investigations have shown that it readily kills bacteria, that it prevents butyric acid fermentation—a fermentation brought about by microörganisms, that it checks the formation of products of decomposition usually found in the digestive tract (indol, skatol), and that it does not interfere with the action of the unorganized ferments of the saliva, gastric and pancreatic juices (Wasseljeff)." Concerning use of perchlorid (bichlorid) of mercury he says (p. 852): "One-half to 1 drachm (2 to 4 c.c.) of the solution of perchlorid of

mercury, with 1 or 2 grains (.06 or .12) of quinin given every four hours for several days, has been highly recommended by Sir W. Broadbent, especially when the motions are offensive and accompanied by much gas, the abdomen much distended and the fever high. Calomel and perchlorid of mercury are only to be given for a few days; but within the last few years more thorough antiseptic treatment has been advised, and numerous drugs have been recommended, not so much with the object of checking the action of the typhoid bacilli which have already passed the intestines and reached the internal organs, as with that of acting on any toxins as yet unabsorbed, and particularly of checking fermentation and the action of numerous microörganisms found in the alimentary canal, the growth and development of which are favored by the presence of the typhoid bacillus, and the product of which may be absorbed through the ulcerated surface of the intestines." In conclusion he says: "My own experience from a number of cases in which the various antiseptics have been tried, makes me think well of this treatment, though it is certainly inferior to the cold water treatment."

Lack of space alone prevents a more extended notice of the highly scientific articles which make up this first volume, and give it character as an able exponent of *fin de siècle* British medicine.

Transactions of the Medical Society of the State of New York for the year 1896. Published by the Society, 1896; 8o, cl.; pp. 544.

We notice with pleasure the following remarks of the President, Dr. Roswell Park, in his inaugural address, Transactions, p. 15: "It is now more than fourteen years since an event in the history of this society, which has had a most marked influence not only upon its affairs, but upon professional matters throughout the land. I allude to the differences of opinion which brought about a separation of this organization from the AMERICAN MEDICAL ASSOCIATION. Whatever the causes which operated at that time to cause this deplorable state of affairs, it is certain that they have since been made less operative. I am sure that a majority of members of the national body long to see this society restored to its early affiliation, and I am sure that a majority of our own members would gladly welcome the day when harmony might be restored, and when the national ASSOCIATION would again receive our delegates with their old-time cordiality. That day, it seems to me, draws ever nearer, and were it not for the ill-advised and much-deprecated animosity of a few opponents of peace and good will, would be plainly in sight. I would urge upon our members the importance of hastening by all judicious means the restoration of former relations and the election once more of delegates to that ASSOCIATION just as soon as we are assured that they will be received in the same spirit in which they are sent. Only the prejudices of a comparatively small number of men stand in the way of this most desirable accomplishment. I urge no lowering of our dignity; only that the actions of fifteen years ago by men who did not then understand our position, and who are perhaps not yet moved by the liberal spirit of the age, be forgotten, and that brothers of the noblest of all professions again clasp hands across the breech which was not of their own making." The committee to whom was referred the President's address reported on the foregoing recommendation as follows: "That this society approves of the sentiments expressed in the President's address concerning the relations of the Medical Society of the State of New York and the AMERICAN MEDICAL ASSOCIATION, and is ready to coöperate in any plan compatible with the dignity of both organizations whereby existing differences could be adjusted in the interests of professional harmony and in accordance with the liberal spirit of the age."[1] In addition to the numerous scientific articles, the volume contains a biographic sketch of Dwight Morgan Lee by D. A. Gleason, memorial of Judson C. Nelson by Frank H. Green, and a memorial of Erastus D. Chipman.

[1] Transactions, p. 37.

Le Gonocoque. Par le DR. MARCEL SÉE, Ancien Interne des Hôpitaux de Paris. Cl. 8o. Pp. 359. Paris: Felix Alcan. 1896.

This monograph gives an exhaustive study of the gonococcus, and the results of several years of study of that interesting object. The literature of the subject has been diffused in the pages of medical journals and in different languages. The author has gathered in this volume all the important facts concerning the microbe of Neisser. The work is divided into two parts, viz.: Experimental and Clinical. There are four chapters in the first part, viz.: I. Microscopic Examination. II. Cultures in (*a*) Albuminoid Media, (*b*) Acid Media. III. Biology of the Gonococcus. IV. Inoculations. The second part is divided into eight chapters, viz.: I. Microbes of the Urethra. II. Importance of the Gonococcus in Urethral Pathology. The Urethrites Non-Blennorrhagic. III. The Process of Blennorrhagic Urethritis. IV. Complications by Direct Propagation of Urethral Blennorrhagia. V. Blennorrhagia of the Genito-Urinary Organs of Woman. VI. Blennorrhagia Inoculated Within the Genital Organs. VII. Gonorrheal Metastases, Generalized Blennorrhagia. VIII. Conclusions Relative to the Biology of the Gonococcus in the Organism and Its Diagnosis. General conclusions. There is also an appendix in which is given the details of many experiments and observations and a fairly complete bibliography since 1893.

In Sickness and in Health, a Manual of Domestic Medicine and Surgery, Hygiene, Dietetics and Nursing. Dealing in a Practical Way with the Problems Relating to the Maintenance of Health, the Prevention and Treatment of Disease, and the Most Effective Aid in Emergencies. Edited by J. WEST ROOSEVELT, M.D., late physician in charge of Seton Hospital for consumptives; visiting physician to Bellevue Hospital, and attending physician to Roosevelt Hospital, New York. Complete in one volume of over a thousand pages, illustrated with four colored plates and numerous engravings. Full analytic index. Sold only by subscription. D. Appleton & Co., Publishers, 72 Fifth Avenue, New York. Price, cloth, $6.00.

What a vast gulf between the old domestic medicine of a quarter of a century ago and this highly scientific one under the reviewer's notice! It is questionable whether notwithstanding the great advances made in popular education, this work will not prove too scientific; and with perhaps the exceptionally practical chapter on hygiene by Dr. Armstrong, be passed over by the average lay reader as too technical. The large class of college-bred men and women will find it exactly adapted to their needs. The others will find it valuable for reference, but probably will not read it *seriatim*.

The precepts are sound, the theories correct and the advice given is uniformly excellent, and in accord with the latest teachings of medical science. No attempt is made to supplant the family physician, as it is obvious that the treatment of disease and the operations mentioned can only be instituted by a trained physician.

Philadelphia Hospital Reports. Volume III. 1896. Edited by GEORGE E. DE SCHWEINITZ, A.M., M.D., member of the Ophthalmic Staff, Philadelphia. Printed by M. H. Power. 1896. Pp. 221. Cl.

These reports are carefully written and reflect credit upon the authors and editor. There are some twenty-five original articles, exclusive of tables, by such well known physicians as Tyson, Packard, Anders, Deaver, Bevan, Horwitz, E. P. Davis, C. K. Mills, Sinkler, Dercum, Lloyd, Stellwagon and others.

Transactions of the American Association of Obstetricians and Gynecologists. Vol. VIII. For the year 1895. Philadelphia. Wm. J. Dornan. 1896. Pp. 404. Cl.

The abstract of the proceedings of the interesting annual meeting, which forms the subject matter of this volume, was duly published in the JOURNAL, Oct. 5, 1895. We have now only to add the notice of the appearance of this volume, and to congratulate the society and its veteran secretary, Dr. Wm. Warren Potter, on the appearance of this carefully edited and hand-

some volume of Transactions. The volume includes portraits and obituary sketches of Franklin Townsend Jr., of Albany, J. Edwin Michael of Baltimore, Thomas Keith of Edinburgh, and L. Ch. Boisliniere of St. Louis.

PUBLIC HEALTH.

Health Report of Salt Lake, Utah.—The Board of Health report for June: Number of deaths 52, against 27 for same month last year; death rate per thousand 8.91, against 4.62 last year.

Definite Diagnoses Required.—The Board of Health of Spokane, Wash., at the meeting of July 6, passed a resolution that in future the health officer shall not accept "heart failure" and other indefinite terms as the sole cause of death in returns. This rule will be strictly adhered to by the health officer in the future.

Smallpox in Cuba.—Reports to July 14 from Cuba, show that smallpox is proving more deadly than yellow fever. The fever is epidemic at the seaport towns, where the Spanish troops are garrisoned, but the smallpox is virulent throughout the interior. A recent letter from Dr. Caminero, United States sanitary inspector at Santiago de Cuba, says there are 2,000 cases in that city, which has 16,000 population.

Colorado State Board of Medical Examiners.—The Colorado State Board of Medical Examiners, July 7, granted licenses to practice to seventy-eight physicians who presented their diplomas from reputable medical colleges, date of graduation being in each case indicated. The annual election of officers of the board was then held, which resulted in the choice T. J. Forhan, M. D., of Rouse, as president, and T. A. Hughes, M. D., of Denver, for secretary and treasurer.

Crusade on Rear Tenements in Jersey City, N. J.—The Board of Health of Jersey City, have begun a crusade against poorly ventilated and improperly drained tenement houses, particularly rear tenements. During the last three weeks diphtheria has raged in the city and twenty-three deaths have resulted. On July 13 seven new cases were reported, and July 14 eight more. The outbreak is believed to be due to poor ventilation and bad drainage.

Vaccinate the Children.—An old and valued correspondent of the JOURNAL, who is one of the most efficient health officers in the United States, writes to us as follows: Now is a good time to begin a systematic effort to arouse the profession to the truth (so much obscured by the battle against humanized vaccine by the commercial methods used to further the various "brands" of animal vaccine) that *given, a typical vaccine,* it *must be properly used to be efficient* and to avoid "accident" which is as a rule caused by a broken vesicle admitting the infection of septic or other foreign disease cause. I wish you would fire a shot in that direction, for it is a fact that physicians avoid vaccinating now where, when we were students, they considered it a simple duty, in infancy.

New Health Laws Desired in Indiana.—Dr. J. N. Hurty, Secretary of the State Board of Health, has sent out a letter to the doctors of the State, outlining a proposition of the Board to bring about at the next session of the Legislature the enactment of a new health law, the present one being considered inadequate. It is proposed to have a State Board of seven members appointed by the Governor, with no salaries attached except for the commissioner chosen by the Board, who shall be experienced in sanitary matters, chemistry and bacteriology. A sanitary laboratory shall be established where all necessary sanitary analysis and bacteriologic examinations and all health work may be done for the people without charge. A modern health board without a sanitary laboratory in charge of skilled and learned specialists would be almost helpless. County health boards shall consist of two physicians and a lawyer or business man, appointed by the commissioners. One of the physicians to be made secretary and county health officer. Secretary to be paid $10 a year for each 1,000 of population, except in counties of over 100,000. The other two members to receive no salary. Expenses to be paid by the county. Duties and powers to be carefully defined.

Health of Buffalo, N. Y.—Buffalo's death rate for the first six months of this year is reported at 11.67 per thousand. The *Buffalo Enquirer* enumerates the causes of the reduction of mortality, some of which are of interest: Frequent examination of all lodging and tenement houses; the maintenance of a bacteriologic laboratory at which free tests of all suspected cases of diphtheria and consumption may be made; the sanitary inspection of schools; a weekly examination, chemic and bacteriologic, of the public water supply; the prompt reporting of contagious diseases by telephone at the expense of the city; the placarding of houses in which there are cases of diphtheria or scarlet fever; the medical and sanitary inspection of all premises exposed to infection; a health office open day and night for the reception of reports and complaints; the publication of reports concerning work done by the several bureaus; the examination of the premises of all milk dealers by sanitary officers and plumbing experts; the registration of all dairy herds from which milk is supplied to consumers, showing by the certificates of a veterinary surgeon whether the cows are free from tuberculosis; a register containing reports concerning all cases of disease on each milkman's delivery route. Particular attention is given to the milk business.

Regulation of Midwives in Chicago.—In this JOURNAL of May 2, 1896, there was published the action of the Illinois State Board of Health concerning the practice of midwifery, based upon a communication from Dr. Frank W. Reilly, Assistant Commissioner of Health of Chicago. This action authorizes municipal health authorities to prescribe rules and regulations governing midwives in their respective jurisdictions, which rules, when approved and adopted by the Board, have the force and effect of law, as do all rules and regulations of the Board. Dr. Reilly has acted promptly on this authorization and has submitted to the Board a code which, if judiciously enforced, can not fail to save many lives and curtail the fast-growing encroachment of the midwife upon the legitimate field of the practitioner.

That there is need of some such regulation is shown by a recent brief search of the records of the coroner's office which discloses no less than thirty-four cases of unfortunate women and girls who have come to an untimely and cruel end through the unregulated practice of midwives in Chicago. Mention was made of one of these in the JOURNAL article above referred to; another came to light on the 24th ult., when a woman was arrested for the third time in seven months for procuring abortion resulting in death. Under instructions the woman was discharged on the ground, as alleged, that there was "no use in holding her to the grand jury, since she had been twice acquitted on trial, although she once admitted in the criminal court that she had used the catheter (found on the postmortem) pushed through the uterus and lying in a bed of pus in the omentum." Close on the heels of this came the arrest of two most notorious abortionist midwives—the postmortem of their victim showing lacerations of the fundus and a perforation through which a loop of intestine had been dragged down, torn apart and the fecal contents filling the cavity. The details of some of the cases are simply sickening—the least offense, but the most frequent, being failure to remove the placenta and consequent death from septic peritonitis. In only thirteen of these thirty-four cases was there any clue to the operator; but this is of minor importance, since in no case was any punish-

ment inflicted and the women are allowed to continue their nefarious pursuits unhampered by any restriction or regulation. It is obvious that the midwives' victims who find their way to the morgue and become the subjects of a coroner's inquest represent but a small number of the total, whose deaths are attributed to other causes.

The rules and regulations follow, in effect, the lines of the Austrian code which, in a modified form, have been approved and urged for adoption in Great Britain. They are as follow:

RULES AND REGULATIONS FOR MIDWIVES IN THE CITY OF CHICAGO.

Under the authority and with the approval of the State Board of Health of the State of Illinois, the Department of Health of the City of Chicago hereby prescribes the following rules and regulations for the practice of midwives within its jurisdiction.

Wilful violation of any of these rules will be visited by prosecution under Section 12 of the State Medical Practice Act, or by suspension of the right of practice, according to the gravity of the offense.

Rule 1.—No person shall practice midwifery in the City of Chicago unless authorized so to do by the State Board of Health of the State of Illinois. If authorized to practice only midwifery the certificate of said Board conferring such authority shall be kept in view in the office or reception room of the midwife, for the information of those seeking her services and for the inspection of the proper city officials. For the purposes of these Rules and Regulations all such duly authorized persons, and none other, shall be known as midwives.

Rule 2.—Within thirty days after the approval of these Rules and Regulations by the State Board of Health, every midwife then engaged in the practice of midwifery in the city of Chicago shall register her name and address with the Medical Inspector of Midwifery, Room 2, City Hall, and shall exhibit to said medical inspector her certificate from the State Board of Health. And thereafter no midwife shall engage in practice in Chicago until she has so registered.

Rule 3.—Midwives shall attend cases of natural labor only. In any case which is not "natural" as hereinafter defined, the midwife shall at once tell the family that the assistance of a physician is necessary. The family shall be asked to choose the physician; but, if too poor to pay, the midwife shall immediately send for the nearest Department physician. A list of Department physicians who will assist in such cases without pay must be kept by every midwife. The list may be obtained at Room 2, City Hall.

"Natural labor" is hereby defined to be one which occurs at or near full term (nine calendar months); one in which the head and no other part presents; and one in which there is none of the conditions specified in the following:

Rule 4.—A midwife must seek the assistance of a physician in any of the following conditions:

A. During Pregnancy.—1. When she has discovered or suspects a narrow pelvis. 2. When there is hemorrhage. 3. When the patient is threatened with an attack of any illness of a serious nature. 4. When a pregnant woman dies suddenly.

B. During Labor.—1. In all cases of unnatural position of the child and if possible before the liquor amnii escapes. 2. In presentations of hands or feet, or when the cord presents with the head. 3. In every case where, from the smallness of the pelvis or largeness of the child's head or from any cause whatever, the descent of the head is interfered with. 4. In disturbance of the labor pains, leading to delay of birth; or in cases of excessive pains followed by exhaustion; or where a child, whose head has already deeply descended, is not delivered for two hours after the opening of the mouth of the womb and the escape of the liquor amnii. 5. In bleeding, at whatever time in labor it may occur. 6. In presenting placenta. 7. If the afterbirth be not expelled an hour after the birth of the child, even if no bleeding has occurred. 8. In all cases of rupture or tear of the perineum as soon as such occurs. 9. In all cases where abortion or premature labor is threatened or has occurred. 10. In twins or multiple births when there is delay of more than half an hour between the deliveries or when there is any complication, and in all monstrosities. 11. In all cases of apparent sickness or threatened danger, as well as on the sudden death of the woman. 12. In the apparently dead newborn child. 13. In all cases of stillbirth, no matter what the stage of development of the child.

C. During Childbed.—1. In the lying-in woman when there is a rise of pulse or temperature (101 degrees F. or over) rigor, tender abdomen, stoppage of the lochia or bad smell of the same. 2. In all cases of illness attacking the newly born child, and especially if the eyes show redness or other signs of inflammation.

When a physician is sent for to a protracted labor the midwife shall, when possible, send a written description in a few words of the cause of the delay, such as "narrow pelvis with head presentation," "cross presentation," "hemorrhage during the afterbirth period," and so forth, so that he may know what it will be necessary for him to take. If a patient or her relations wish a physician called in, even if the midwife does not see any abnormal symptoms, she is not to object or try to persuade them not to do so. The choice of the physician—except in the case of a Department physician—rests with the patient or her relations, and the midwife is not to express any opinion unlsss requested to do so. The midwife must inform the physician truthfully and accurately of all she has observed about the case previous to his arrival and stay as long as he wishes, to assist him and conscientiously carry out his orders.

Rule 5.—Under no circumstances shall any midwife have in her possession a set of obstetric forceps, or any other instrument for the performance of an obstetric operation nor any drug or instrument or other article which may be used to procure an abortion or to cause or hasten the expulsion of a fetus, whether at term or otherwise. Nor shall any midwife give chloroform, ether or any other anesthetic, except by the advice and in the presence of a physician. Nor shall any midwife give or advise the use of any drug or medicine, except the simple domestic remedies commonly used in the household. Any violation of this rule shall be considered evidence that the midwife performs operations and practices medicine in violation of Section 10 of the Medical Practice Act, and is subject to the penalties prescribed in Section 12 of said Act.

Rule 6.—Every midwife, in addition to her usual equipment, must be provided with a case book, in which she shall keep a full and correct record of all cases of labor attended by her. This book shall be subject to inspection by the Department Medical Inspector, and shall be open to the physician (if one is called in), who may write therein, and sign, his own remarks upon the case in hand.

Rule 7.—Every midwife shall make and keep a registry of each birth at which she professionally assists or advises; and shall report the facts thereof to the Department of Health on the blanks furnished by the Department within five (5) days after each such birth.

Rule 8.—Midwives must keep themselves and all their appliances scrupulously clean and must avoid contact with sick persons and decomposing substances of every kind, so that their fingers, appliances or clothes may not contain any infective material which might be conveyed to the lying-in woman during examinations and thereby produce puerperal or childbed fever. They are strenuously enjoined before touching a lying-in woman to wash their hands and instruments thoroughly with a disinfectant. It is particularly dangerous for a midwife who is attending a lying-in woman, or any sick person, where there are foul-smelling emanations, to go direct to another case without first thoroughly cleansing her hands and appliances and changing her clothing. Unless the cleansing process be thoroughly carried out even after a healthy confinement there will be remains of blood and other fluids on the fingers, and especially under the nails, which will there decompose and be dangerous to the next case attended. The midwife must, therefore, keep her nails cut short and preserve the skin of her hands from chaps, injuries and indurations.

Rule 9.—After assuming charge of a lying-in case the midwife must not leave the patient during delivery and must stay with the woman at least one hour after the expulsion of the afterbirth in a natural labor. In cases of other labors or in threatened danger she must always await the arrival of the physician and remain with the case so long as he thinks necessary and faithfully carry out his instructions. The midwife shall see to the proper ventilation of the lying-in room, and to the keeping of the bed and body linen in a thorough state of cleanliness. She shall be responsible for the cleanliness, comfort and proper dieting of the mother and child during the lying-in period, which in a normal case means the time occupied by the labor and a period of ten days thereafter.

Rule 10.—No midwife shall visit—much less nurse or attend—a case of chicken pox, diphtheria, erysipelas, measles, membranous croup, scarlet fever, smallpox, whooping cough or other contagious or infective disease. If she should unfortunately be exposed to such contagion or infection, she shall report the fact to the Department and shall not attend or visit a lying-in case until she has thoroughly disinfected her person and clothing and has been pronounced safe by the medical inspector. In the case of a lying-in woman contracting puerperal fever or any septic condition whatever the midwife must abstain from attending any other woman at the same

time. A midwife must not under any circumstances assist in the laying out of dead bodies.

Rule 11.—In apparently dead-born children at or near term, in whom no sign of putrefaction has developed, the midwife, in the absence of the physician, who must be summoned at once, should practice the methods of resuscitation taught her until the child breathes regularly or for at least half an hour.

Rule 12.—Midwives must conscientiously guard the secrets of their patients and must only divulge them if the law requires them to do so.

Health Report.—The following health reports have been received in the office of the Supervising Surgeon-General, Marine-Hospital Service:

SMALLPOX—UNITED STATES.

New Orleans, La., June 1 to 30, 11 deaths.
Shelby County, Tenn., June 1 to 30, 3 cases.
Mobile County, Ala., June 5 to July 5, 2 cases.

SMALLPOX—FOREIGN.

Bombay, India, June 9 to 16, 8 deaths.
Calcutta, India, May 30 to June 6, 1 death.
Corunna, Spain, June 13 to July 4, 1 death.
Genoa, Italy, June 27 to July 4, 1 case.
Madrid, Spain, June 23 to 30, 11 deaths.
Matanzas, Cuba, July 1 to 8, 3 cases.
Montevideo, June 6 to 13, 4 cases.
Moscow, Russia, June 13 to 20, 1 death.
Nogales, Mexico, July 4 to 11, 6 cases.
Odessa, Russia, June 20 to 27, 9 cases, 2 deaths.
Osaka and Hiogo, Japan, June 13 to 20, 86 cases, 27 deaths.
Prague, Bohemia, June 20 to 27, 2 cases.
St. Petersburg, Russia, June 20 to 27, 7 cases, 6 deaths.
Tuxpan, June 20 to 27, 2 deaths.
Warsaw, June 13 to 27, 5 deaths.

CHOLERA.

Bombay, India, June 9 to 16, 5 deaths.
Calcutta, India, May 30 to June 6, 49 deaths.

YELLOW FEVER.

Matanzas, Cuba, July 1 to 8, 63 cases, 39 deaths.

SOCIETY NEWS.

Wayne County, New York, Medical Society.—The annual meeting of this society was held at Lyons, N. Y., July 14, and was largely attended. The opening address was made by President T. H. Hallett, of Clyde. The following officers were elected for the ensuing year: President, J. W. Atwood, of Marion; Vice-President, Alice Brownell, of Newark; Secretary, A. A. Young, of Newark; Treasurer, Darwin Colvin, of Clyde.

Iowa and Illinois Central District Medical Association.—The annual meeting of this association was held at Davenport, Iowa, July 9. The guest of the meeting was Dr. Frank Billings, of the Chicago Medical College, who read an interesting paper on pyelitis and exhibited plates illustrative of the subject. The following officers were elected for the ensuing year: President, Charles M. Robertson, of Davenport; Vice-President, J. R. Hollowbush, of Rock Island; Secretary, E. S. Bowman, of Davenport; Treasurer, A. W. Cantwell, of Davenport.

The Winnipisiogee Academy of Medicine held their first annual meeting at Laconia, N. H., July 6. The following officers were elected for the ensuing year: President, A. W. Abbott, Laconia; Vice-President, P. S. Foster, Laconia; Treasurer, Joseph Theriault, Laconia; Secretary, George H. Saltmarsh, Lakeport. The post-prandial exercises were presided over by President A. W. Abbott, and included addresses by Governor Busiel, Dr. Conn and others. Dr. Conn gave an able and interesting address on "The Progress of Antiseptic Surgery," in which he contrasted surgical methods of to-day with those of forty years ago. In closing he said:

"The triumphs of surgery are very startling to the laity, and in fact, the profession must keep step to the music else they are in danger of being considered a back number. The time has gone by when any one can imitate Mr. Bergh, who was a great friend of the animal creation and took every occasion to stand up for their rights. He was throughout his life the acknowledged leader of the anti-vivisectionists in America. In a lecture on this subject, after describing the experiments of Dr. Robert McDonald, who successfully practiced the transfusion of animal blood into the veins of a dying person, Mr. Bergh comments as follows: 'In other words, this potentate has discovered the means of thwarting the decrees of Providence and snatching away from its Maker a soul which He had called away from earth.'

"To us as a profession it seems as if the above was the utterance of an insane person, but we are told that Mr. Bergh was a thoroughly honest, upright man, and believed that he was doing a good work. We will grant that his intentions were of the best, that he was heartily in sympathy with the brute creation, that his object in life being the saving of animals from any unnecessary suffering he had a great work to perform. At the same time any man who would express himself as he is recorded to have done, and at the same time not express any sympathy for poor suffering humanity, must have been without some of the common instincts of human love, or else he had delusions, of which devotion to the brute animal was one, and complete disregard of the rules governing the good Samaritan was another."

NECROLOGY.

ADOLPH OLDENDORFF, M.D., at Carlsbad, June 16, in his 65th year. Founder and editor of the new periodical, *Zeitschrift f. Sociale Medicin*, and a prolific writer for medical journals, encyclopedias, etc.

LUIGI VILLA, M.D., Professor at the Institute Sieroterapico at Milan. The promising career of this talented devotee of science was closed abruptly last month, by an accidental scratch on the finger received while inoculating an animal with some virulent culture (glanders). Death ensued in about a fortnight.

LELOIR, Professor of Dermatology and Syphilology, at Lille, France. Although only in his 41st year the list of the various articles and works he has published, as given in the *Progrès Médical* of June 27, nearly fills two closely printed pages.

W. SCHLESINGER, M.D., at Vienna, in his 58th year; editor of the *Wien. Med. Blaetter* until recently and founder of the "Ambulatorium" for poor sick women.

JOSEPH BARKLEY, M.D., died at his home in Leesburg, Ky. after an illness of less than a week, aged 69 years, on the 11th inst.

SAMUEL SEXTON, M.D., died in New York city on July 11. He was born in Ohio in 1833; a graduate of the University of Louisville in 1856, and five years afterward was appointed an assistant surgeon of the Eighth Ohio Volunteers, and served in Virginia. He came to New York after the war and established himself as a successful aurist. He lectured in the New York Eye and Ear Infirmary and was a member of many societies besides having been decorated in 1889 by the Venezuelan Government for services in the cause of public education. He was the author of numerous reports and pamphlets on aural and dental subjects. He was Past-President of the American Society of Otologists, a fellow and office bearer in the Academy of Medicine, and an interested member in a number of scientific and patriotic organizations.

M. S. THOMAS, M.D., at Leavenworth, Kas., July 9, aged 66 years. He graduated from the University of Maryland School of Medicine, Baltimore, Md., in 1853. The diseased came to Leavenworth in 1856, and at the commencement of the late Civil War he was a surgeon at Fort Leavenworth. At the breaking out of actual hostilities, however, he resigned this position and entered the Confederate service as a surgeon, serving in the Army of North Virginia throughout the war. At the close of the struggle he returned to Leavenworth and resumed the practice of his profession. He was physician-in-charge, St. John's Hospital and St. Vincent's Orphan Asylum, Leavenworth, member of the Kansas State and Eastern Kansas Medical Societies and President of the Leavenworth County Medical Society.

R. L. DUNN, M.D. (Tulane University, Medical Department, New Orleans, 1859), at Yazoo City, Miss., July 10, aged 60 years.——A. J. Rutherford, M.D. (University of Buffalo, Medical Department, Buffalo, 1889), at Milwaukee, Wis., July 11, aged 36 years.——Samuel H. Griswold, M.D. (Castleton Medical College, Castleton, Vt.. 1844), at Rutland, Vt., July 13, aged 78 years.

MISCELLANY.

Oliver N. Huff, M.D., has resigned his position as Medical Superintendent of the Palmyra Springs (Wis.) Association, and will resume his practice in Chicago.

Free Medical Tuition.—Governor Atkinson announced nineteen appointees to the Augusta (Ga.) Medical College, July 9. A number of years ago the State gave $10,000 to this college with the understanding that the governor should be allowed thereafter to send two pupils from each congressional district in the State each year free of tuition. This privilege was not taken advantage of for a number of years as the law was overlooked.

New York Post-Graduate Medical School.—The fifteenth annual announcement of the New York Post-Graduate Medical School and Hospital has just been issued. Five hundred and forty-two physicians from all over this continent have attended the courses at the institution during the past year. More than one thousand operations were performed in the hospital, which is one of the largest in the city, containing special wards for babies and children, while nearly twenty thousand patients were treated in the outdoor department.

Extension of the Bertillon System in New York State.—The work of establishing the Bertillon system of identifying criminals has just been begun at Sing Sing prison. On July 3 Mr. George Porteous, formerly the chief of the identification bureau at Chicago, arrived at Sing Sing with a supply of the instruments used for measuring bones, cranial angles, etc., and after instructing the officials there in the manner of measuring criminals and classifying the descriptions he will proceed to Brooklyn, where it has been decided to introduce the method into the Kings County penitentiary.

Intoxicants and Sunstroke in Australia.—The *Medical News* states that during the month of January there occurred over three hundred deaths from sunstroke in Australia. When called upon to offer suggestions relative to its prevention the Board of Health promptly informed the Colonial Government that of all predisposing causes none was so potent as undue indulgence in intoxicating liquors, and in its treatment nothing seemed to have a more disastrous effect than the administration of alcoholic stimulants. After this precaution, suggestions were offered regarding the selection of proper clothing, etc.

Connection between Articular Rheumatism and Pneumonia.—Oliva describes in the *Gaz. degli Ospedale e delle Clin.*, No. 60, a couple of cases of typical pneumonia appearing as a tardy complication in acute articular rheumatism. In one case Fränkel's diplococci were found in the sputa. He concludes that articular rheumatism, in certain cases, is evidently produced by Fränkel's diplococci. Maragliano also notes (No. 74) bronchopneumonia as a complication in the course of various kinds of infective diseases, in most of which Fränkel's diplococci were observed in the sputa.

Plural Ectopic Gestation.—P. Minehard, M.D., reports a case with the following points of interest: At the time of rupture the tube contained two fetuses, each with its individual placenta. One fetus was small (two and a half inches long) and flattened. The other fetus was normal in appearance and about thirteen inches long. At the time of rupture the patient had not menstruated for nearly nine months. The patient never had any symptom that indicated disease of the uterus or of the appendages. The tube on the opposite side was healthy in appearance. The patient is now in the fourth month of uterine pregnancy and does not present any sign of tubal or ovarian disease.—*Am. Jour. of Obst. and Dis. of Women and Children*, July.

Human Actinomycosis.—The *Nordisk Med. Arkiv*, 1895, No. 27, reports the number of cases treated in the hospitals of Sweden to date as 84, but Ljunggren adds 27 in his own practice in the province of Schonen, where it is also quite prevalent among the cattle. He ascribes it to the common habit of chewing grains of corn. The location was the cheek, mouth or neck, except in one case of peritoneal actinomycosis, and another that affected the general health. All recovered after the indicated treatment: Extensive incision, curetting and rinsing the infected focus, and drainage.

The New Religion—Pasteurism.—The *Journal de Méd. de Paris* ridicules the way in which the French and some others have installed the antitoxin treatment as a fetish, putting up statues to Roux in Paris, and offering all kinds of sacrifices on his altar. It remarks in its usual sarcastic style that the Parisians consider the Institut Pasteur a sort of Olympus, with Roux and Marmorek for the gods, who promise their followers health and happiness in this world instead of waiting for the next. It concludes that in five years antitoxic serums will have had their day and been relegated to oblivion, quoting Auerbach: "Behring's serum is more dangerous than useful" (*Cbl. f. Inn. Med.* No. 18); Gottstein: "It does not confer immunity, and has no prophylactic action" (*Therap. Monatsch.* No. 5), and Soerenson, "It is useless in cases of croup" (Ib. No. 3).

Action of Porcelain Filters on Viper's Venom.—Porcelain filters do not allow the ferments and toxins of microbes to pass through them, nor the toxic elements in the venom of vipers. But it is known that this filtered product is not entirely without physiologic action, as it raises slightly the temperature of animals inoculated with it. Phisalix reports that he inoculated guinea pigs with strong doses of the filtered product, which would have been immediately fatal if they had not been filtered. Twenty-four hours later he injected a fatal dose of the unfiltered venom. The control animals promptly succumbed, while the others resisted perfectly. They had therefore been effectively vaccinated. These experiments showed that the toxic and vaccinating elements are distinct substances. Their separation by the filter is an additional support of the theory of vaccination by specific substances.—*Semaine Médicale*, June 24.

A Cactus Alkaloid, Pellotin.—From a species of cactus, known to the Mexicans as "pellote," Dr. Hefter, of Leipzig, has separated the active principle which he has named pellotin. Professor Jolly of Berlin has made a number of experiments with it upon patients in Charité Hospital, Berlin, following those previously made by Dr. Hefter upon animals and himself. He found that three-quarters of a grain would almost always cause several hours of sleep, and that no subjective symptoms followed its use beyond a little giddiness in about 20 per cent. of the patients. He observed, however, a marked influence upon the pulse rate, which was ten to twenty beats slower during sleep, but returned to normal on waking. It is estimated that half a grain is equivalent to fifteen grains of trional or thirty grains of chloral hydrate. The alkaloid is quite insoluble, hence the hydrochlorate is always employed.—*Medical News*, July 4.

Budapest Exposition.—We are pleased to advise our readers that at the Milleniel Exposition now going on at Budapest, the owners of the Franz Josef Natural Aperient Water have established a special department for the convenience of all medical practitioners visiting the Exposition. Copies of the leading medical journals of the world are kept on file there and

arrangements are provided for the reception and care of all mail matter, and those contemplating visiting the Exposition are cordially invited to make this department their headquarters for receiving their letters, conducting their correspondence, meeting their friends and consulting the various medical journals while on the Exposition grounds. Letters may be addressed care of the Franz Josef Aperient Water Exhibit, Milleniel Exposition, Budapest, Austro-Hungary. Any inquiries of those intending to visit the Exposition may be addressed to the American representative of the Spring, Elijah J. Molloy, 101 Beekman St., New York City.

Indications for Radical Cure in Inguinal Hernia of Children.—First try and reduce the hernia with a light and suitable bandage, which may alone produce a cure. If the hernia is accompanied by ectopic testis, the bandage must be made specially for it. The latter alone only indicates an operation when it is found impossible to protect the testes from the pressure of the bandage. If difficulties arise in the application of the bandage, then surgical intervention is inevitable. With incarcerated hernia the radical cure should always follow herniotomy. The radical cure must always be performed without regard to the age of the child, in cases of very large scrotal hernia. Under 6 years it consists in ligating the hernial sac and then tamponing the hernial cavity, according to Karewski's method. Above this age, Kocher's method is to be preferred.—Schoenfeldt in *Memorabilien*, April.

Hennig's Successful Treatment of Diphtheria with Lime Water and Ice.—Commenting on the statistics gathered by the government, of serum treatment in diphtheria, showing a mortality of 12.9 per cent. Hennig states that he has only lost 3.06 per cent. during the last eighteen years, 59 out of 1,927 cases. His method is the prompt and continuous use of pure lime water every fifteen minutes night and day, freely gargled and some swallowed, made fresh each time, with an ice bandage applied to the throat outside. He uses for the latter a beef's esophagus, as lighter, cheaper and better for other reasons than a rubber bag. It is filled with ice and extends from ear to ear, securely fastened at the ends to prevent the escape of water. He insists also on absolute cleanliness, nourishing food, with egg lemonade and vanilla ice cream, and alternate doses of liq. ferr. sesquichlorat. and sol. kal. iod. He treats nasal and laryngeal complications with lime water also, sprayed from a Richardson atomizer for several minutes at a time, into the patient's wide open mouth while he breathes tranquilly.—*Therapeutische Wochenschrift.*

The Toxin of Tuberculosis.—Numerous experimenters have endeavored to separate the disease producing principle or toxin in tuberculosis, and their observations may be summed up as follows: Prudden and Hodenpyl have ascertained that the poisonous substance (or substances) is not present in the nutrient media in which the bacilli are grown, but fixed in the bodies of the bacilli themselves in a very resistant form. The poison is not altered when within the body, for a considable length of time, so that a person will recover from tuberculosis only after the dead bacilli are gotten rid of, or the poison rendered harmless. Maffucei claims that the toxic substance evolved by the tubercle bacilli acts only after a long period of time has elapsed. Riechet and Hericourt have separated a toxic substance from these bacilli which is poisonous to tubercular rabbits, but has no effect upon healthy ones. Thomas Weyl has succeeded in separating an extremely poisonous substance from cultures of the tubercle bacillus, and to which he has given the name toxo-mucin.—Dr. Chas. F. Craig in *N. E. Med. Monthly*, July.

Rupture of the Uterus; an Unusual Case.—Dr. Sherwood Dunn reports a case which he saw at Professor Richelot's clinic, Paris: On opening the abdominal cavity M. Richelot found a soft tumor intimately adherent to the peritoneum which he first thought to be a neoplasm of the ovary, and then, by reason of its soft, mushy consistency, a possible pyo-salpinx, or caseous or dermoid cyst. On carefully separating the adhesions and following it downward, it was thought to be attached to the uterus. On circumscribing the pedicule he discovered that it was not attached to, but really protruded from a rupture, opening into the uterine cavity about the size of a silver dollar. He enlarged the opening and carefully detached and removed the mass; and not until then was it found to be a placenta weighing from one to one and one-half pounds. The patient passed a comfortable night with but little chloroformic vomiting, but the following day the temperature became elevated and she died on the evening of the second day after the operation. It is probable that the placenta, when expelled through the ruptured uterus, came in immediate contact with the peritoneum, and an adhesive membrane was thrown out which protected the neighboring organs from contamination. When this protection was removed, both from the peritoneal surface and the uterine cavity, the septic material caused blood-poisoning to which the patient succumbed.—*Pac. Med. Jour.*, July.

Vesical Tumor.—The *Clinical Journal*, May 13, quotes from *Annales des Maladies des Organes Génito-urinaires* the following case: Dr. Ferria has observed the case of a patient, aged 24, who complained of painful micturition and hematuria. This latter symptom had been two years in existence, hemorrhage occurring at considerable intervals at first; latterly more often, with increased pain and frequent urgent desire to empty the bladder. The hemorrhage occurred more abundantly at the close of the act of micturition till shortly before advice was sought, when severe pain occurred at the beginning of the act and bleeding on almost every occasion, and only at the beginning also, the remaining urine being limpid. On examination it was determined that there was a considerable degree of retention, and that while the prostate and seminal vessels seemed normal, the sound, when introduced, on approaching the neck of the bladder came in contact with a surface apparently irregular and friable. On relieving the retention the catheter enabled Dr. Ferria to recognize a tumor in the bladder. Suprapubic cystotomy was performed, and a papilloma found on the anterior bladder wall to the left side, about three finger breadths from the urethral orifice. The pedicle was slender, 2 and 1½ centimeters in length, and the tumor was of half a walnut, with a prolongation on one side which reached the neck of the bladder and penetrated the prostatic urethra.

Discontinuance of "Climate and Health."—

U. S. Department of Agriculture, Weather Bureau.
Washington, D. C., June 22, 1896.

The discontinuance of the publication, *Climate and Health*, is announced to take effect with the end of the present fiscal year, June 30, 1896. Vol. II, No. 3 (four weeks ended March 28, 1896), will be the last issue of *Climate and Health*. It has been deemed necessary to take this action in view of a doubt having arisen as to whether the publication of *Climate and Health* was authorized by the act making appropriation for the Department of Agriculture for the fiscal year ending June 30, 1897. With the discontinuance of *Climate and Health* will also terminate the weekly collections of the statistics of mortality and morbidity that have heretofore been published therein, and the physicians and health officials who have coöperated with the Weather Bureau in collecting these statistics are requested to return, by mail, under the Departmental frank, all blank forms and franked envelopes on hand upon the receipt of this announcement. The Chief of the Bureau wishes to express to all coöperators his sincere appreciation of their voluntary services rendered in connection with the publication of *Climate and Health*. It is the intention of the Chief of the Bureau to have prosecuted during the coming fiscal year a number of special climatologic studies, and it is expected that the statistics collected during the present fiscal year will be of much value in this connection. The results of these special researches will, if their importance justifies the so doing, be published in the form of special bulletins, at such times and in such shape as the circumstances may warrant and make necessary. Willis L. Moore, Chief of Bureau.

Puncture in Hydrocephalus.—Schilling reports in the April *Memorabilien* his experience in four cases of hydrocephalus treated with puncture, two of which recovered. Ages, seven weeks to a year and a half. The oldest child was taken with convulsions a month after an attack of influenza, with vomiting, strabismus and absence of spastic phenomena. Head increased in size to 57 cm. The left ventricle was punctured and aspirated, and 300 c.cm. was removed, followed by violent convulsions and collapse. A week later another puncture removed 270 c.cm. and the head measured only 45 cm. Phosphorus treatment and recovery. Three years have passed since, and the head now measures 52 cm. The youngest child was relieved of 2 c.cm. of a bloody serous fluid from the right ventricle, although puncture of the left ventricle had been barren. Marked improvement followed, but strabismus and vertical nystagmus later ensued. There was a suspicion of meningitis in this case, due to septic infection from the rite of circumcision. The cases not benefited were congenital hydrocephalus and tubular meningitis. Schilling recommends puncture of the side ventricle as an easily performed operation. A broad elastic bandage should be applied to the head afterward, and phosphorus administered.

Fallopian Tube Tabloids Among the Latest Therapeutic Innovations from London.—The *Medical Press and Circular*, June 10, considers with all due seriousness the alleged innovations of extracts of extra-glandular origin. It says: "Although it is discordant with medical opinion that any of the tenets of homeopathy should have a place in educated medical practice, we admit that the most modern phase of therapeutics trends in this direction. The fashion just now is to prescribe for the disease of any organ an extract from the active principle of that organ itself. Thus it happens that the firms which cater for advanced therapeutic ideas of this sort are offering to the profession suitable preparations of such active principles. Messrs. Burroughs, Wellcome & Co., for instance, announce that they are ready to supply: Salivary-gland tabloids for use in amylaceous dyspepsia; pineal-gland tabloids for softening of the brain, etc.; nuclein tabloids for nervous prostration, etc.; kidney-substance tabloids for diseases depending upon disturbance of the renal functions; cervical lymphatic-gland tabloids for glandular swellings, etc.; Fallopian-tube tabloids for neurotic affections; liver-substance tabloids for uremia, etc.; spinal-cord tabloids for brain diseases. They have retained the services of a former pupil of Pasteur, who devotes his whole attention to this branch of the business, and who maintains that the active principles can be thus isolated and preserved in perfection. No doubt, if disease does not 'mock the meat it feeds on,' these preparations will prove effectual."

The New York County Medical Association.—At the June meeting of that society the special committee on hospitals made a report condemning the action of the appointing powers in the city institutions, in part as follows: "The committee desires to report that though it has used its best endeavors to secure a just balance of evidence in the hospital patronage affair, yet the testimony given before our body has been given entirely by the profession and not by the colleges. The faculties have ignored our communications and have kept strangely silent. Yet the very fact of their casting honorary positions broadcast among those physicians who were unjustly removed from places long and ably filled is circumstantial evidence that injustice was done at the instigation of the colleges, and that peace offerings are now necessary. The campaign of the colleges is one of deception, and in order to make such a campaign successful it was necessary to ensure no medical man being appointed a Commissioner of Public Charities, as the whole scheme would have been transparent to a physician. Several members of the faculties waited upon the Mayor and urged that 'no doctor should be a commissioner, as that would break up the harmony between the colleges and the board.' Having thus rendered deception less easy of discovery, they proceeded to hoodwink the Mayor and the board, making many statements which you have seen exposed as perfectly ridiculous by the medical journals. The latest plan is to give a sop to complainants for quieting purposes, and then to address the commissioners with the idea that the profession was satisfied. These sops are appointments as consulting physicians. As is well known such an appointment is only a superannuation and practically is of no value to anyone; but the idea seems to be to convey to the commissioners the impression that injustice has been righted, while concealing the fact that the appointees are not returned to their old places, but are expected to be satisfied with positions that exist only on paper."

Investigation of the HCl Secretion and Motility of the Normal Stomach.—Schüler has been investigating the action of the healthy stomach. He finds that the quantity of free and combined HCl varies very much at times in the same person and in different persons. The maximum of free acid is between 0.05 and 0.2 per cent.; of acid in combination, between 0.012 and 0.11 per cent.; and of total acidity, between 30 (0.11 per cent.) and 70 (0.26 per cent). When the free acid amounts to more than 0.22 per cent. and the total acidity is over 70, there is hyperacidity. (This limit is too high for some persons.) The figures refer to Ewald's test meal; the time required for digesting it was found to be from 45 to 75 minutes. Pentzoldt's statement was confirmed that acid was secreted later with solid foods than with broths, etc., but was then more concentrated. Meat and milk were found to be about equal in inducing the secretion of the acid, while porridge and potato soups were followed by a smaller total amount of acidity. The effect of various medicines and foods was also studied. Salt, five grams, produced no effect on the digestion, while sixteen grams diminished the HCl secretion and interfered with the peptic action of the gastric juice. Twenty-four grams first stopped and then stimulated the secretion of HCl. Bicarbonate of soda first stopped the secretion of acid, but this was followed later by an increase in the secretion, which rose then to normal and above. Repeated doses of it (7-1-2-2-1 grams) resulted in permanently diminishing the amount of acid secreted, while increasing the amount of mucus. Bismuth subnitr. was found to be a genuine antiacid, and it diminished the amount of acid secreted without any subsequent increase. HCl medication produced no apparent effect on the degree of acidity. The motility of the stomach was studied by means of fistulas on dogs, 17–27 cm. below the pylorus. It was found that the temperature of the food had a great influence on the emptying of the stomach. Three hundred grams of spring water at 18 degrees C. had all gone from the stomach in ten minutes, while water at 28 and 40 degrees retarded the motility of the stomach to a marked degree. Ice water first retarded it for fifteen minutes, and then stimulated it, the first retarding effect extending to the muscles of the pylorus. Solid ingesta remained longer in the stomach than fluid foods. Milk can leave the stomach almost as rapidly as water (dogs). Carbonic acid in statu nascendi diminishes the motility, to which Schüler ascribes the favorable effect of bicarb. sod. a few hours after meals, in some gastric affections. From the *Zeitschr. f. klin. Med.* xxviii and xxix., in the *Centralblatt f. Phys.* April 4.

The Action of the Pupil and its Relation to Disease.—Irritation myosis is found in all inflammatory affections of the brain and meninges. In these affections, when the myosis gives way to mydriasis, it has the same significance as in opium and chloroform poisoning, *i. e.*, it indicates paralysis and a probable fatal termination. We find this form of myosis in apoplexy, which may thus be distinguished from embolism. It occurs early in the development of tumors near the oculo-motor center or

nerve. It is seen in the beginning of an hysteric or epileptic attack, in neuroses of the parts supplied by the fifth nerve and in morphin habitues. Paralytic myosis is found in those conditions affecting the integrity of the spinal cord above the dorsal vertebræ. The scleroses, destruction of the cord by traumatism, tumors, caries of the cervical spine, late stages of this portion of the cord, etc., cause this form of myosis. In acute mania the appearance of this form of myosis following mydriosis is prognostic of dementia. Irritation mydriosis is found in hyperemia of the cervical cord, irritation of the cervical cord by morbid growths, or from spinal anemia and in the primary stages of tabes. An increase of intra-cranial pressure and sensory excitement by intestinal worms will cause it; physical influences produce it in mania, melancholia and paretic dementia. What is known as Rampoldi's signs of phthisis is a fluctuating irritation of mydriasis. Paralytic mydriasis is found in progressive paralysis, and diseases of the base affecting the third nerve; Knapp saw it late in thrombosis of the cavernous sinus; orbital and intraocular tumors and glaucoma cause it by destroying the ciliary nerves. Diseases at the periphery of the afferent apparatus have this form of mydriasis as a symptom if the process has destroyed their functional activity. This form of mydriasis sometimes comes as a post-diphtheritic paralysis.—*E. C. Ellett, M.D., in Memphis Medical Monthly*, June, 1896.

Problems in Army Medical Administration.—Lieut.-Col. A. A. Woodhull, Chief Surgeon, Department of Colorado, has lately been testing the ability of the medical officers of his department to deal with active service conditions. He has issued a series of problems in which the surroundings of a command with all the observable conditions affecting the troops are particularized, and the medical officer is required to state what would be his course of action and to give his reasons for adopting it instead of some suggested alternative. He has ample time to mature his views in solving the problems, as although the last series, No. 4, was issued June 30, 1896, the time limit for solution is December 31, next. In active service prompt action is often imperative, as in the selection of a camp when two sites are available, each of which has its advantages more or less offset by insanitary conditions. The time given to the consideration of the arguments for and against each site in the hypothetic case will assuredly be productive of good resuls should the officer who has solved such a problem be confronted hereafter with the necessity of choosing. Colonel Woodhull's last series consists of the three following problems: 1. A regiment of regular cavalry, with two lieutenants of the medical department attached, is coöperating with a brigade of infantry against a large body of outlaws carrying on a guerilla warfare. The troops are armed with the modern small-bore firearms, and the outlaws with large-bore muzzle and breech-loading rifles, shot-guns, muskets for buck and ball, and a few modern weapons. The climate of the region corresponds to that of Arkansas in the summer; the country is broken and wooded, interspersed with prairies of moderate size; there are numerous small streams with rocky beds the hills and alluvial banks in the lowlands; there is freedom from swampland, but the banks of the lower streams are marshy; the country is sparsely settled and not well cultivated but there is grazing for the animals; the villages are very small and the population, generally speaking, is disaffected. There are no available railroads and few good country roads. As a rule the cavalry will be broken up into troops or smaller bodies engaged in running down the guerillas who have descended from the hills, in cutting off their escape into the hills and occasionally in penetrating the hills in pursuit or search of them. There will be few collisions of masses, but a number of harassing encounters with resulting casualties. At the end of three months the outlaws will have been disarmed or will have surrendered. A base hospital for the infantry, to which cavalry may be admitted, will be established on a stern-wheel boat on a navigable stream fifty miles by land from the average line of the mounted operations. State in a general way what supplies would be required for three months' field service, especially the kind of tentage and the transportation for the disabled. What detachments of the Hospital Corps would be necessary? How will the sick list proper probably be made up, and what proportion and character of casualties may be anticipated? How will the medical service generally be rendered, bearing in mind that the cavalry will usually operate in detached bodies of a troop or less? As the senior of the two officers, indicate what you would anticipate and how you would provide in advance for the sanitary, the medical and the surgical care of the troops without drawing upon the infantry in the field. 2. A division of newly-raised infantry volunteers recruited in the central Western States, goes into three brigade camps, a mile apart, on the left bank of the Ohio, above Fort Thomas, June 1. The camp was originally intended only for temporary purposes, but circumstances prolonged its occupation until September 30. The usual diseases affecting such troops prevailed in due course, but by July 10 the sick list represented 10 per cent. of the strength and there had been ninety deaths in camp. Visiting the camp as a medical inspector, July 15, and continuing as such for these and other troops until this camp was broken up, what would you expect to find the medical condition had been and to be at the time, what diseases would you fear might arise or continue to prevail, and what result would you hope to attain should your advice be followed, with reasons. Give in this connection a carefully prepared schedule of the advice proper to be tendered for the preservation of the health of these troops. 3. A general engagement has occurred between forces of nearly equal fighting capacity and equipped with modern arms. During the night the enemy, who has been on the defensive, retired, leaving his dead, a large proportion of his severely wounded still on the field, and his hospital two miles in rear of the line of battle with 300 badly wounded. With these there were left five officers and twenty-five enlisted men of his medical corps, with tents, medical supplies and subsistence for one week, but no transportation. The army that held the field went into action with 30,000 men of all arms (divided into two corps) present, of whom 25,000 were actually engaged. The battle occurred in October in latitude 38° 30′ north, ten miles south of a river navigable for fair-sized steamers. The field base was on that river against which the defeated army had been advancing. The country is fairly level and moderately wooded with three good country roads five miles apart, but with no railroad between the base and the battlefield. The medical director was informed twenty-four hours in advance of the probable site and time of the battle. What arrangements should be made for the field and base hospitals? What number of wounded should be expected and how would they be divided, in anticipation, among those requiring no transportation, those who could be carried in army wagons and those for whom ambulances would be necessary? Explain the arrangements made for the medical department, assuming that the full complement of medical officers and men is with the troops and that the base hospital is independently equipped. The army moves forward at daylight after the battle and anticipates contact with the enemy's rear guard, leaving one regiment of infantry to guard the hospitals and for urgent outside fatigue. The Medical Director remains throughout the day and rejoins the army in the night. Explain in such detail as convenient how he will have been engaged through the day and write out the principal orders he will give for the disposition of his own wounded and those of the enemy. It may be assumed that it will rain hard within twenty-four hours after the battle.

Gleanings.—(*Semaine Méd.*, June 24.) Efficacy of faradization of the uterus in accelerating delivery and arresting postpartum hemorrhage. Three cases.——(*Revue Int. de M. et de C.*, June 25.) All that is sold for entire wheat flour is not always what it pretends to be. Capsules keep the thyroid gland fresh longest. A new operation for hemorrhoids removes the tumors if the skin does not adhere to them, ligates and divides them and sutures the skin again. An inguinal hernia is described, 55 c. long, 40 in diameter and 95 in circumference. 3,000 boils and carbuncles successfully sprayed with hot phenic solution à la Verneuil. Athetosis found to be almost invariably preceded by diphtheria.——(*Therap. Woch.*, June 28.) Recovery from abdominal extirpation of a large myoma and duplex uterus.——(*Progrès Méd.*, June 27.) Able illustrated article on the lesions found in multiple neuritis.——(*Gaz. Méd. de Paris*, June 27.) Coli bacilli found in the blood of gastric fever cases. Intense hemophilia in female infant.——(*Union Méd. de Canada*, July.) Milk diet with cream of tartar lemonade, absolute prophylaxis of puerperal eclampsia.——(*Deutsch. Med. Woch.*, June 25.) Beneficial effect of the constant current in a few cases of traumatic peripheral paralysis.——(*Nouveaux Remèdes*, June 8.) Painting the nipples with cocain will suppress the lacteal secretions.——(*Wiener Klin. Rundschau*, June 28.) Efficacy of compresses wet with alcohol in incipient phlegmons. Case of gallstone causing suppuration and finding its way into the pleura and bronchus, until the stone and pus were coughed up. Demonstration that sulphureted hydrogen is formed in the mouth during mastication, which digests alone certain vegetables.——(*Cbl. f. Chir.*, June 27.) Fraenkel's method of narcosis: Before administering the chloroform, he injects 1 c.cm. of a solution of morph. muriat. 0.15; atropin sulph. 0.015; chloral hydrat. 0.25. He has never had a fatal case nor severe asphyxia in twenty-two years. Artificial creation of bone tissue by implanting calcined bone.——(*Medittina*, No. 8.) Cholera found to produce grave lesions in the brain.——(*Tidsskrift for den Norske Laeg.*, June 15.) Beneficial action of antispasmin in whooping cough confirmed. Dose under 1 year 0.01 to 0.015 three or four times a day, 0.02 under 3 years, and 0.04 over 3. Or by this formula: Antispasmin, 2; aquæ dest., 900; elixir pectoral, 98.

Louisville.

DEATH REPORT.—There was a total of seventy deaths for the past week and eight stillbirths. Consumption was the cause of nine. One case of diphtheria and four of scarlet fever were placarded.

DR. H. HORACE GRANT will deliver the annual address on Surgery at the next meeting of the Mississippi Valley Medical Association.

BOARD of SAFETY.—Impeachment proceedings have been instituted against the Board of Public Safety by the Common Council and the trial will be by the Board of Aldermen. Among the charges submitted by two members of the council to the Board of Aldermen are the following: General and intentional disregard of the enforcement of the laws of the State against gamblers and gambling, pool-rooms, and houses of ill-fame; the ordering a discontinuance of a list of these houses which is required to be kept by the police department under orders from the above board; the creating of great confusion in the financial accounts of the city hospital and alms house by causing the discontinuance of all the financial books of the institutions, making it impossible to tell the cost per month or year of either institution, and making it possible for unjust and false claims to be brought in against them, and the bringing in of claims which should be charged to another year; the wilful violation of an ordinance passed by the council providing for the number of officers in charge of the Eruptive Hospital by their wrongfully increasing the number of paid employes and fixing illegal salaries, without the consent or approval of the mayor or council and to the injury and prejudice of the city treasury and the city service, for all of which they claim the Board is guilty of usurpation in office for which they and each of them ought to be removed from office.

THE PUBLIC SERVICES.

Army Changes. Official List of changes in the stations and duties of officers serving in the Medical Department, U. S. Army, from July 11 to July 17, 1896.

Major Clarence Ewen, Surgeon, leave of absence on account of disability is extended one month on account of disability.

Col. Dallas Bache, Asst. Surgeon-General (Hdqrs. Dept. of the Platte), is granted leave of absence for two months, to take effect on or about July 15, 1896.

Major James C. Worthington, Surgeon, extension of leave of absence granted on account of sickness is further extended one month on account of sickness.

Navy Changes. Changes in the Medical Corps of the U. S. Navy for the week ending July 18, 1896.

Surgeon R. C. Persons, orders to duty at naval hospital revoked and ordered to continue on present duty.

P. A. Surgeon H. N. T. Harris, ordered to the Pensacola navy yard.

Surgeon S. H. Dickson, ordered to the "Texas."

Asst. Surgeon J. M. Moore, detached from naval hospital, Norfolk, and ordered to the "Texas."

Asst. Surgeon A. Farenholt, detached from the "Monterey" and ordered to the Mare Island hospital, Cal.

Marine-Hospital Changes. Official list of changes of station, and duties of Medical Officers of the U. S. Marine-Hospital Service, for the period from June 21 to July 15, 1896.

Surgeon George Purviance, to assume temporary command of Service at Philadelphia, Pa., for thirty days, July 3, 1896.

P. A. Surgeon C. T. Peckham, placed on waiting orders, July 3, 1896.

P. A. Surgeon J. H. White, to proceed from New York, N. Y., to Key West, Fla., for special duty, July 10, 1896.

P. A. Surgeon G. T. Vaughan, granted leave of absence for thirty days, July 7, 1896.

P. A. Surgeon W. G. Stimpson, to assume temporary command of Service at Port Townsend, Washington, July 3, 1896.

Asst. Surgeon E. K. Sprague, to proceed from Boston, Mass., to New York, N. Y., for temporary duty, July 10, 1896.

Asst. Surgeon H. W. Wickes, granted leave of absence for twenty-seven days, July 8, 1896.

Asst. Surgeon J. B. Greene, to proceed from Baltimore, Md., to Pt. Pleasant, N. J., for physical examination of crews of life saving service, July 13, 1896.

Asst. Surgeon W. M. Jordan, to proceed from Birmingham, Ala., to New York, N. Y., for temporary duty, July 13, 1896.

PROMOTIONS.

Asst. Surgeon J. A. Nydeggar, commissioned by the President as Passed Assistant Surgeon, July 7, 1896.

Asst. Surgeon W. J. S. Steward, commissioned by the President as Passed Assistant Surgeon, July 8, 1896.

APPOINTMENT.

William M. Jordan, of Alabama, commissioned by the President as Assistant Surgeon, July 7, 1896.

Change of Address.

Baughman, J. N., from Flat Lick, Ky., to 617 Chestnut St., Evansville, Ind
Caldwell, J. R., from West Liberty, W. Va., to St. Clairsville, Ohio.
Collins, R. G., from 5059 State St. to 5139 Wabash Ave., Chicago.
Guyon, E. F., from Pendleton, Ore., to Montpelier, Idaho.
Kellogg, G. M., from Las Vegas, N. M., to 2310 Indiana Ave., Chicago.
Kellogg, W. H., from Oakland to Palo Alto, Cal.
Lewis, W. M., from 154 N. Spring St. to 248 Wilcox Building, Los Angeles, Cal.
McDaniel, E. D., from Mobile, Ala., to Milton, Fla.
Osborne, G., from 75 Rush St. to 161 Michigan St., Chicago.
Roy, G. G., from 1½ Edgewood Ave. to 20 E. Ellis St., Atlanta, Ga.
Seiler, Carl, from Philadelphia, Pa., to Saranac Lake, N. Y.

LETTERS RECEIVED.

Abrahams, R., New York, N. Y.; Appleton, D. & Co., Chicago.
Battle & Co., St. Louis, Mo.; Brown, F. F., New York, N. Y.; Brumme, Carl, Detroit, Mich.; Bartlett, Edward P., Springfield, Ill.
Canton Surgical and Dental Chair Co., Canton, Ohio; Castle, Wilmot & Co., Rochester, N. Y.; Cone, Andrew, New York, N. Y.; Chart Co., The, Bond Hill, Ohio.
Doliber-Goodale & Co., Boston, Mass.; Dietz, R. E., Company, New York, N. Y.; Dick, E. B., Oakville, Ill.; Davison, F. B., Fleetville, Pa.
Eads, S. O., Somerset, Ky.; Eichelburger, W. C., Terre Haute, Ind.
Fletcher & Hudson, Mt. Clemens, Mich.; Foster, Eugene, Augusta, Ga.; Fairchild Bros. & Foster, New York, N. Y.
Gihon, A. L. 2), New York, N. Y.
Hamilton, E. E., Wichita, Kan.; Hamilton, Augustus, Coleridge, Neb.; Hosmer, A. J., Vienna, Austria; Hubbard, Thomas, Toledo, Ohio; Hummel, A. L., Advertising Agency (2), New York, N. Y.
Ingals, E. Fletcher, Chicago.
Johnson, H. L. E., Washington, D. C.
Klebs, Edwin, Chicago; Kruell, T. J., Los Angeles, Cal.; Kegan, Paul, French, Trübner & Co., Ltd., London, Eng.
Levy, M., Paris, France; Lancaster, R. A. Gainesville, Fla.; Leighton, N. W., Brooklyn, N. Y.
Manley, Thos. H. (2), New York, N. Y.; Merrick, M. B., Passaic, N. J.; Maltine Mfg. Co., New York, N. Y.; Marks, A. A., New York, N. Y.; Minor, J. C., Hot Springs, Ark.; Mettler, L. Harrison, Chicago; McDaniel, E. D., Milton, Fla.; Mulford, H. K., Co., Philadelphia, Pa.; Macey Co., Fred, The, Grand Rapids, Mich.; Mellier Drug Co., St. Louis, Mo.; Maclean, Donald, Detroit, Mich.; Mackie, L. V. G., Brant Rock, Mass.; Miehle Printing Press and Mfg. Co., Chicago; Murray, N., Rye Beach, N. H.
Pasteur Chamberland Filter Co., Chicago; Press Clipping Bureau, The, Boston, Mass.; Paquin, Paul, St. Louis, Mo.; Publishers' Collection Agency, St. Paul, Minn.; Parker, W. T., Cleveland, Ohio; Parkhill, C. S. (2), Hornellsville, N. Y.
Rio Chemical Co., St. Louis, Mo.
Slagle, Jacob, Portsmouth, Ohio; Stearns, F., & Co., Detroit, Mich.; Summerfield, J. E., Atlanta, Ga.; Sutherland, J. Lue, Grand Island, Neb.; Scott, J. W., Springfield, Ill.; Schachner, August, Louisville, Ky.; Smogg, D. P., New York, N. Y.; Scott, W. A., Swanton, Ohio; Stechert, G. E., New York, N. Y.; Smart, Charles, Washington D. C.
Tuley, Henry E., Louisville, Ky.
Wyckoff, R. M., Brooklyn, N. Y.; West, C. J., Washington, D. C.; Widman, J. F., McGregor, Iowa; Wilkinson, Geo., Omaha, Neb.; Walker, A. B., Canton, Ohio; Ward, M. R., Pittsburgh, Pa.; Warfield, Clarence, Galveston, Texas.